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ABSTRACT

This paper presents the latest in a series of studies examining school district report cards. The purpose was to study the relationships among factors reported on school district report cards from Nevada high schools. The 44 categories reported on Nevada's 1993-94 report card represent the study's independent variables, grouped into the areas of demographics, teachers, students, and expenditures. The 23 high school outcome variables for ninth and twelfth grades represent the study's dependent variables. Analyses indicated that most of the state's report card categories have no relationship to student outcomes. Report cards and the reported analyses of entries should be simple, straight-forward, and easy to understand. The portrait of the impact of the educational process on graduating seniors in Nevada is incomplete, and missing or redundant data can produce misleading findings. The study suggests that the value of advanced degrees and teacher licenses may be less than it has been purported to be and that teacher experience is misunderstood and overrated. Parental involvement at the high school level, as reported in Nevada, is minimally linked to academic achievement. It is possible to glean important information from school district report cards, but the current cards probably report too much data to be meaningful. Eleven appendixes present statistical associations among variables. (Contains 2 figures, 6 tables, and 15 references.) (SLD)

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AN ANALYSIS OF NEVADA'S REPORT CARDS ON HIGH SCHOOLS

I. INTRODUCTION

The development of report cards (RC) on schools has become common in a number of states. Currently, there is great interest in accountability based on student performance. However, little attention has been given to the value and uses of "report card" data. Generally, a reader does not know what relationship the entries have to each other or to student achievement, which is considered the "bottom line." The inclusions tend to imply that the factors reported strongly influence student achievement but that relationship is not directly stated or explored. What can parents, educators, or policy makers learn from examining these state RCs? Nevada's state report cards on high schools are an exception to most other state report cards, for their report cards partially analyzed and described the associations between report card categories and student outcome. Few other states have undertaken such analyses.

The purpose of this research was to study the relationships among factors reported on one set of report cards—those developed for high schools within Nevada. The analysis offers information about how the selected factors relate to student outcomes. Results should interest policy makers and educators as they attempt to determine where and how to allocate resources (money, personnel, etc.), as they consider report cards.

II. BACKGROUND

This paper represents the latest in a series of studies examining school district report cards. The investigations of 1988-89 Tennessee report card data explored the relationships among eight school district variables (*average attendance, average professional salaries, county per capita income, expenditure per student, average daily membership, percentage of oversized classes, percentage of students on free or reduced lunches, and percentage of educators on upper Career Ladder levels II and III*) and the relationship between each variable and average student test scores at the school district level. In 1990-91, Tennessee began use of its new Tennessee Comprehensive Assessment Program (TCAP), thereby creating a new set of student outcome measures. The authors examined the relationships among 15 school district variables (*number of schools, average daily membership, percent student attendance, percent enrollment change, percent oversized class, percent students on free or reduced lunch, expenditure per pupil, county per capita income, percent career ladder, average professional salary, percent receiving regular high school diploma, percent receiving honors diploma, percent vocational education, percent special education, and percent chapter 1*) and the relationship between each variable and average student test scores at the school district. In addition, the 1990-91 and subsequent report cards report TCAP results at substantially more grade levels within school districts (2-8, 10) making possible the study of relationships among school district characteristics and student outcomes at both school levels (*elementary, middle, secondary*) and individual grade levels (*2nd, 3rd, 4th, etc.).* This data analysis made possible interesting extensions of the 1988-89 report card studies and made possible a comparison of certain findings in the two sets of studies.

The 1992-93 Arkansas school district report cards are similar to Tennessee's school report cards for they both used and reported a norm-referenced national achievement test, and a criterion-referenced state-designed achievement test. The authors evaluated the Arkansas's 1992-93 school district data by examining the relationships among 17 demographic items (*Attendance Rate, Completion Rate, Retention Rate, Black Student % / Black Staff %, Board/Superintendent/Principal's Expense, Athletic Expense, ADM/Size , Resource Rate, Education Level, Income Level, Free Lunch Rate, Square Miles, Millage, Certified Staff)* with six outcome indicators (SAT8 25th Percentile, SAT8 50th Percentile, SAT8 75th Percentile, Average ACT, MPT 8th Grade Pass, MPT Student Pass Rate).

From 1993-95, the authors (French, Bobbett, 1993, 1994, and 1995) have been involved in several parallel studies investigating the categories and outcome indicators reported in numerous states in different regions of The United States. The authors examined the state report cards in 11 Southeastern (1993), 10 Northeastern (1994), and 8 Western (1995-96) states. These studies compared five general areas including: (1) instruments used to measure student outcome, (2) student outcomes reported and the procedures for reporting them, (3) levels of outcome data reported, *i.e., district, school, grade level, classroom*, (4) school and community factors reported, and (5) statistical procedures used in evaluating the data.

III. NEVADA SCHOOL DISTRICT REPORT CARDS

The Executive Summary of Nevada's "Analysis of Nevada School Accountability System (Based on NRS 385.347) Submitted to Nevada State Legislature" states:

> During the 1993 session, the Nevada State Legislature enacted into law Nevada Revised Statute 385.347, commonly known as the Nevada School Accountability Law. It requires all school districts in Nevada to inform the public on the performance of public schools throughout the state. School accountability was accomplished throughout the state. School accountability was accomplished through a system of reports described in the present analysis. School district reports provided information about each school in the district to media sources and other interested groups or individuals.
>
> Comprehensive accountability reports for 332 schools and all 17 school districts for the 1992-93 school year were provided by the school districts in a timely fashion. The quality of the reports from each district was regarded as high, and the bulk of the data requested in the handbook appeared in the reports generated by each district. . . .
>
> Statistical analysis reported here investigated relationships between various school characteristics and statewide testing of student achievement. It should be noted that many of the findings that could be uncovered in analyzing individual student data may be obscured since the present analyses compare information aggregated at the school-level. Although further analyses are recommended in later accountability reports, the present school-level analyses suggest that particular effectiveness of:
>
> - in-school programs and school-readiness preschool programs that target low socioeconomic children and children with English as a second language;
> - programs to improve student attendance rates;

- programs to encourage parental attendance at school conferences and involvement in their children's education;
- programs to encourage teachers to continue their own academic achievement; and
- programs that encourage student involvement in gifted/talented and advanced placement programs.

The accountability reports to the public must contain information concerning:

- educational goals and objectives;
- comparisons of student achievement for the current school year with previous school years;
- ratios of students to teachers and other data concerning licensed and unlicensed employees of the school district;
- comparisons of teacher assignments with the qualifications and licensure of teachers;
- expenditures per pupil, set forth individually for each source of funding;
- curriculum employed by the school district, including any special programs for students at an individual school;
- records of attendance and advancement of students and graduation rates in each high school;
- other information as directed by the State Superintendent of Public Instruction.

Nevada's Analysis of Nevada School Accountability System Submitted to Nevada State Legislature secondary school analyses section stated:

> . . . the increased number of secondary schools and the reduced influence of homogeneous socioeconomic and cultural factors on averaged school data should create difficulties in finding reliable relationships between school characteristics and achievement performance. . . . Further, at the secondary school-level, regression analyses were conducted that are not reviewed in this report since the analyses failed to profile significant information.
>
> . . . the directions of partial correlations are listed in parentheses for certain school characteristics that slightly missed reaching a statistically significant level ($p \leq .05$, but $< .10$), but only if they were related to other student achievement data in the other analyses in that section (e.g., the other writing traits on a grade-level Stateside Writing Examination).
>
> In the Reading section of grade 9 CTBS/4, performance increased with increases in the schools' attendance rates and increases in the percentage of students in advanced placement and gifted/talented programs. Reading performance decreased with increases in the percentage of students in English as a Second Language programs and increases in the percentage of teachers with baccalaureate degree only in schools.

> Few reliable findings emerged for the Mathematics section of grade 9 CTBS/4. Performance increased with increases in the percentage of students whose parents attended the schools' first parent/teacher conferences and increases in the percentage of students in advanced placement programs.

The Implications sections overviewed the relationships between the report card categories and the variety of outcome indicators. An example from the Implications section follows:

> The "school characteristics" reviewed in the analyses' discussion can be considered as falling into types: those that are characteristics primarily of schools and those that reflect an **interaction** of **student/family characteristics and school characteristics**. The findings for the **relationship between** primarily school characteristics and student achievement are mixed in the present school-level analyses. One school-based variable that had a positive relationship on grade three students and on reading in grade nine was **teachers with degrees higher than a baccalaureate**. This **variable** also had a positive relationship with on grade nine writing achievement, although the relationship was not significant due to the small number of schools compared. To the extent that this variable is important to student achievement, schools should encourage teachers to continue their own educational attainment. Also, teachers who have taught for 10 years and beyond appear to be related to improved reading at grade three, but the relationship was inconsistent on other achievement results. (emphasis added)

The 44 categories reported in Nevada's report card represent the study's independent variables. These categories are grouped into four areas: demographic, teachers, students, and expenditures. See Figure 1 (with abbreviations used in this paper). The 23 high school outcome indicators for 9th and 12th grades represent the study's dependent variables. These outcomes were further segregated into areas according to the type of outcome. For instance, outcomes 1 and 2 are grouped into one area representing national percentile rankings; outcomes 19 through 23 are grouped into one area representing college admissions tests. See Figure 2 (with abbreviations used in this paper). Also, refer to Appendix E for the outcome area groupings.

IV. METHODOLOGY

Investigators used the 1993-94 Nevada school district report card data for the study. The 23 student outcomes were used as the study's dependent variables, and the 44 categories were used as independent variables. The following research questions guided the study:

1. How do school district characteristics currently reported in the report cards relate to the reported student achievement?
2. What report card areas (demographic, teachers, students, and expenditure) have an important relationship with different outcome areas?
3. Which of the 23 outcome indicators are influenced the most by the 44 report card categories?
4. What report card categories have an important relationship with each of the 23 outcome indicators?
5. After removing the eight categories having redundant or missing data, what report card areas

A. DEMOGRAPHIC

1 % Enrollment. (%EN)
2 % Enrollment Change. (%ECH)
3 % Transiency rate. (%TR)
4 % Attendance. (%AT)
5 % Dropout rate. (%DR)
6 Number of students per counselor. (NCS)

B. TEACHERS

7 % Teacher with BA's. (%TBA)
8 % Teachers with MA's. (%TMA)
9 % Teachers with PHD's. (%TPHD)
10 % New teachers. (%TNE)
11 % Teachers with 1-3 yrs experience. (%T1-3)
12 % Teachers with 4-6 yrs experience. (%T4-6)
13 % Teachers with 7-9 yrs experience. (%T7-9)
14 % Teachers with 10 yrs experience. (%T10)
15 Oversize class in **English.** (NENG)
16 Oversize class in **Math.** (NMAT)
17 Oversize class in **Science.** (NSC)
18 Oversize class in **Social science.** (NSS)
19 % of **English** classes taught by teachers outside their area License /Endorsement. (%ENLIC)
20 % **Math** classes taught by teachers outside their area License/Endorsement. (%MALIC)
21 % **Science** classes taught by teachers outside their area License/Endorsement. (%SCLIC)
22 % **Social science** classes taught by teachers outside their area License/Endorsement. (%SOLIC)
23 % **Occupational education** classes taught by teachers outside their area License and Endorsement. (%OCLIC)

C. STUDENTS

24 % of students receiving **special education** services. (%SP)
25 % of students receiving English as a Second Language Service. (%ESL)
26 % of students receiving **migrant** education. (%MIG)
27 % of students receiving **gifted and talented** programs. (%GIF)
28 % of students receiving **free** lunch. (%FRL)
29 % of student receiving **music** education. (%MUS)
30 % of student receiving **art** education. (%ART)
31 % of students participating in **occupational education**. (%OC)
32 % of students participating in **foreign language**. (%FL)
33 % of students participating in **advanced placement** programs. (%APPER)
34 % of students participating in **athletics**. (%ATH)
35 % of students whose **parents** attended the first parent/teacher conference. (%PTC)

D. EXPENDITURES

36 the school's per pupil expenditure for **instruction**. ($INST)
37 the school's per pupil expenditure for **administration.** ($ADMIN)
38 the school's per pupil expenditure for **building operation**. ($BLDG)
39 the school's per pupil expenditure for **staff support**.($SFSO)
40 the school's per pupil expenditure for **student support**. ($STSP)
41 % of expenditures provided by **local.** (%LOC)
42 % of expenditures provided by **state**. (%ST)
43 % of expenditures provided by **federal.** (%FED)
44 of expenditures provided by **opening balance sources.** (%$OPE)

Figure 1. Nevada's 44 high school report card categories.

9th Grade

1 - the national percentile rank of the school's average score on the standardized Comprehensive Test of Basic Skills of r grade nine in **reading**. (O: RKRE)

2 - the national percentile rank of the school's average score on the standardized Comprehensive Test of Basic Skills of r grade nine in **math**. (O: RKMA)

3 - increase or decrease (negative numbers) in the national percentile rank of the average score on the CTBS for the school at grade nine in **reading**. (O: RECT)

4 - increase or decrease (negative numbers) in the national percentile rank of the average score on the CTBS for the school at grade nine in **math**. (O: MACT)

5 - the percentage of ninth grade students in a school that score in the bottom 25 percent (national) of scores on the CTBS in the area of **reading**. (O: REBQ)

6 - the percentage of ninth grade students in a school that score in the top 25 percent (national) of scores on the CTBS in the area of **reading**. (O: RETQ)

7 - the percentage of ninth grade students in a school that score in the bottom 25 percent (national) of scores on the CTBS in the area of **math**. (O: MABQ)

8 - the percentage of ninth grade students in a school that scored in the top 25 percent (national) of scores on the CTBS in the area of **math**. (O: MATQ)

9 - the percent of ninth grade students proficient in "**ideas**". (O: 9ID)

10 - the percent of ninth grade students proficient in "**organization**". (O: 9OR)

11 - the percent of ninth grade students proficient in "**voice**". (O: 9VO)

12 - the percent of ninth grade students proficient in "**conventions**". (O: 9CO)

12th Grade

13 - the percentage of graduating class passing the **reading** sections of the Nevada High School Proficiency exam. (O: %REPR)

14 - the percentage of graduating class passing the **writing** sections of the Nevada High School Proficiency exam. (O: %WRPR)

15 - the percentage of graduating class passing the **mathematics** sections of the Nevada High School Proficiency exam. (O: %MAPR)

16 - change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **reading** sections of the High School Proficiency exam. (O: IDRE)

17 - change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **mathematics** sections of the High School Proficiency exam. (O: IDMA)

18 - change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **writing** sections of the High School Proficiency exam. (O: IDWR)

19 - percentage of graduating class taking the college ACT exam. (O: %GACT)

20 - percentage of graduating class taking the college **SAT** exam. (O: %GSAT)

21 - the average scores obtained on the **ACT** Composite. (O: AACT)

22 - the average scores obtained on the **SAT** Math section. (O: ASATM)

23 - the average scores obtained on the **SAT** Verbal section. (O: ASATV)

Figure 2. Nevada's 23 high school report card outcome indicators.

(demographic, teachers, students, and expenditure) have an important relationship with different outcome indicators ?

6. After removing the eight categories having redundant or missing data, which of the remaining 36 report card categories have the largest and smallest percent of association with the outcome indicators?

7. After removing the 8 categories having redundant or missing data, what report card categories have an important relationship with each of the 23 outcome indicators?

8. Are there differences in the categories' relationships with 9th grade and 12th grade outcomes?

9. What categories have the most association with student outcomes?

Investigators treated student outcome data (test data) as the dependent variable and other characteristics reported as independent variables that influence student outcomes. Several analyses were conducted.

To answer research question #1, a Pearson Product Moment correlation was developed as a means of comparing report card categories to each 9th and 12th grade outcome indicators.

For question #2, the Stepwise Regression (SWR) statistic was used to identify category areas (demographic, teacher, student, expenditure) with a significant association to outcome areas. This multivariate model was used for two reasons: there was a small number of high schools used in the study (i.e., 45), and variances for many of the categories might have an unusually large impact on the analysis.

To answer question #3, no further analysis was needed. The SWR statistic was used to identify categories areas with a significant association with each of the 9th and 12th outcome indicator areas.

To respond to question #4, no further analysis was needed. The SWR statistic was used to examine the number of important associations among the 44 report card categories and the 9th grade outcome, 12th grade outcome, and the sum total assocations.

Before question #5 was answered, the raw data for each category were re-examined. Because some categories reflected a large number of zeros, eight report card categories were eliminated from further study. The Exploratory Mixed Stepwise (EMS) regression model was used to examine the relationships between the report card areas and the outcome areas.

For question #6, the EMS regression was used to examine the percent of variance between each of the 23 outcome indicators and the 36 remaining report card categories.

In response to question #7, the categories with an important association with each of the 23 outcome indicators were identified.

No further analysis was need to answer question #8. The EMS analysis was used to compare categories that had as significant association with the 9th grader outcomes and 12th grade outcomes.

To respond to question #9, both the SWR and the EMS regression models were used to examine collectively the aggregate association for the 36 remaining categories on each of the 9th grade outcomes, 12th grade outcomes, and the total assocations.

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V. FINDINGS

The study's findings are reported in two areas: (A) descriptive analyses of high schools, and (B) responses to the research questions.

A. Descriptive Analyses of High Schools

1. **Category Data** Nevada's 44 high school categories were organized into four areas: general demographics, teachers, students, and expenditures.

a. **General demographics.** The average high school's **enrollment** (%EN) was 1180 students. The largest high school had 2,952 students and the smallest high school had 70 students. The standard deviation (SD) analysis suggested two SDs between the largest and smallest high school. The average high school's percent enrollment change (%ECH) was +5.7%. The three SDs between the largest (49.9%) and smallest (- 25.4%) %ECH suggested that Nevada's HS enrollment change varied greatly. The transiency rate averaged about 26% and ranged from 0% to 57%. The percent student attendance (%AT) for the top HS was three SDs above the mean and for the bottom school district, three SDs below the mean. The range of attendance was 85% to 98%. The average HS reflected a 6.4% dropout rate (%DR) that ranged from 0% to 44.4%. The average HS reflected about 351 students per counselor that ranged from 138 students per counselor to 544 students per counselor.

b. **Teachers.** Seventeen of Nevada's 44 categories reflected teacher related activities. About 53% of the teachers had earned a BA degree, 46% had received a MA degree, and a very few had earned a PHD (0.7%). The percent **BA's** ranged from 19% to 100%, the percent **MA's** ranged from 0% to 81%, and the percent **PHD's** ranged from 0% to 10%. The 3 SDs between the top and bottom percentages for the three teacher degree classifications suggested that the teachers reflect a wide degree of postsecondary education. About 6% were new teachers, 19% had taught 1-3 years, 12% had taught 4-6 years, 10% had taught 7-9 years, and 53% had taught 10 or more years—a large percentage were experienced teachers.

About 23% of English, math, science, and social studies were classified as oversized classes. Approximately 1% of all classes in English, math, science, social studies, and occupational education were taught by teachers outside their area of License/Endorsement . The 3 plus SDs above the mean suggested that some HSs strongly rely on a large percentage of teachers teaching outside their area, especially in English and math.

c. **Students.** Nevada report cards had 12 categories describing the HS student's academic profile. Approximately 8% of the students take **special education**, about 2.2% of the students take **English as a second language**, less than a half percent participate in **migrant** education, and almost 3% participate in **gifted and talented** classes. Although about 11% of the students qualify for free and reduced lunch,

the SD of 11.7% suggested the high schools with the largest percent (43%) of free and reduced lunch were three SDs above the state mean. Art participation averaged about 23% and music education about 16%. The SD of 11 suggested that the largest participation in art (42%) and music education (64%) were 3+ SDs above the state mean—music and the arts are strongly emphasized in some HSs.

One HS had a 100% participation in **occupational education**. The mean and SD of about 11% suggested that one or more HSs strongly promote occupational education. About 26% of the students take a **foreign language** in HS(range: 0% to a large of 54%): foreign language is strongly emphasized in one or more HSs. Approximately 6% of the students participate in **advanced placement programs**. The SD of about 7% suggested that the HS with the largest percent of advanced placement programs (31%) considers them an essential academic activity. Approximately 44% of the students participate in **athletics** (range: 0% to 92%). About 48% of the parents participate in the first parent-teacher meeting in the fall. The SD of 24% reflected that the HS with the smallest percent participation (9%) was almost 2 SDs below the state mean, and the HS with the largest percent participation of 100% reflected 2 SDs above the state mean.

d. **Expenditure** Nine of the 44 categories related to expenditure related issues. The average HS spent about $3,158 on each **student**. One HS spent a low of $2,204 per student while another spent a high of $6,093 per student—a $3,889 difference. The **student expenditure per administrator** averaged about $402 and ranged from a low of $338 to a high of $2,293—the largest amount spent was about seven times more than the HS that spent the least. Do the community members, board members, or parents think that a large administrators salary is directly linked to educational excellence? The typical HS spent about $740 for the school's per pupil **expenditure for building operation**, and ranged from $294 to $1,814—a $1,520 or 600% difference. The typical HS spends about $177 on **per pupil expenditure staff support** (range: $76 to $694). The average school spends about $502 on **per pupil expenditure for student support**. The SD of $129 reflected that one HS's per pupil expenditure for student support was 3 SDs below the state mean while the HS that spent the most—$891—was 3 SDs above the mean. Of the average HS budget, **51% local** contributions, about 41% came from the **state**, approximately 3% was **federal** money, and 5% came from **open balance sources**. Local contributions ranged from18% to 70%, state contributions ranged from 0.3% to 72%, federal contributions ranged from 0.4% to 13%, and open balance sources ranged from 1% to 30%. The four expenditure categories' 3-plus SD for these expenditure categories suggested that high school funding sources varied greatly.

2. **Student Outcome Data** Nevada reflected 23 high school student outcome indicators: 12 categories related to 9th grade student outcome, and 11 outcome indicators related to 12th grade student outcome (Appendix B). Both reading and math outcome indicators were reported from four perspectives: percent national ranking, percent increase or decrease in the national percentile rank of the average score on the CTBS, bottom 25 percentile, and top 25 percentile.

a. Ninth Grade. The average HS's CTBS' **reading** outcomes reflected a 55.8% national percentile ranking, a -0.4% decrease, a 17.5% for the bottom 25 percentile and a 28.1% for the top 25 percentile. The average HS's CTBS **math** outcome reflected a 54.7% national ranking, a 0.0% increase, a 21.2% for the bottom 25 percentile and a 30.3% for the top 25 percentile. There were 3 plus SDs between the bottom and top outcome scores for the four reading outcomes and the four math outcomes. Collectively, the analysis suggested that the reading scores were slightly above the national average but reflected a subtle downward trend. The math scores were also slightly above the national average and reflected no change.

About 67% of 9th graders were proficient in ideas, 64% in organization, 79% in voice, and 73% in conventions. The three plus SDs (11.2, 12.8, 10.6, and 12.5, respectively) between the lows (22, 20, 28, and 18, respectively) and highs (85, 82, 100, and 92, respectively) suggested a large disparity between the bottom and top schools.

b. 12th Grade/high school graduate Proficiency. About 97% of the graduating class passed the **reading** and **writing** sections of the Nevada High School Proficiency (NHSP) exam, and approximately 98% passed the **math** exam. Reading reflected a 5.9% SD, writing reflected a 6.4% SD, and math reflected a 6.3% SD. Although Pahrump HS's reading, writing, and math scores (M=62.9, 57.6, and 58.3, respectively) were 3 SDs below the state mean, Nevada's other 44 HSs scores were within one SD of the state mean for all three outcome indicators. Reading (+0.2%) and math (+0.3%) scores reflected a slight upward trend and the writing (-0.3%) scores reflected a slightly downward trend.

Almost 45% of Nevada's HS graduates took the ACT exam, and about 28% of the graduates took the SAT exam. Since the ACT exam reflected a 15.6 SD and the SAT exam reflected a 18.4 SD, the great majority of schools were within 2 SD of the mean. The ACT composite score averaged 20.8, and ranged from 17.1 to 23. The SD of 1.3 suggested that the top and bottom schools were about 3 SDs above and below the state mean. The average SAT math score was 473 and the average SAT verbal score was 426. The combined average SAT of 899 is about 100 points higher than the national norm [800= a z-score of "0" or at the mean]. This also suggested that Nevada's students taking the SAT scored higher in math than reading.

B. Findings Pertinent to Research Questions

1. How do school district characteristics currently reported in the report cards relate to the reported student achievement?

The Pearson Product Moment correlation (univariate analysis) was used to examine the relationship between each of the 23 high school outcome indicators and the 44 report card categories. The shaded area of Appendix C illustrated that a large number of relationships were not significant ($p \leq .05$, 1-tail, $r = \pm .288$).

a. Outcome Indicator Relationships. High school outcome indicators were organized into two subgroups. There were twelve 9th grade outcome indicators and eleven 12th grade outcome indicators. About 39% of the 9th grade relationships were significantly related to the 44 category variables, and about 43% of the 12th grade outcome indicators reflected significant associations with the 44 category variables. The shaded areas also showed no consistent associations between any of the 44 categories and the 23 outcome indicators (examine shaded areas). When the 9th and 12th grade relationships were examined collectively, 41% of the possible relationships were significant and 59% of the relationships were not. Of the 44 possible relationships per outcome indicators, the following had no significant relationships:

Number of Categories	No Significant Relationships to:
36	REBQ - the percentage of ninth grade students in a school that score in the bottom 25 percent (national) of scores on the CTBS in the area of **reading**.
35	RKMA - the national percentile rank of the school's average score on the standardized Comprehensive Test of Basic Skills of r grade nine in **math**. MACT - increase or decrease (negative numbers) in the national percentile rak of the average score on the CTBS for the school at grade nine in **math**. IDMA - change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **mathematics** sections of the High School Proficiency exam.
34	RECT- increase or decrease (negative numbers) in the national percentile rak of the average score on the CTBS for the school at grade nine in **reading**. IDWR - change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **writing** sections of the High School Proficiency exam.
19	9VO - the percent of ninth grade students proficient in **"voice"**. %GSAT- percentage of graduating class taking the college **SAT** exam.
18	%GACT - percentage of graduating class taking the college **SAT** exam.
16	9OR - the percent of ninth grade student proficient in **"organization"**. 9CO - the percent of ninth grade student proficient in **"conventions"**.

This analysis illustrated two points: (1) a large number of possible relationships are not significant, and (2) there was no consistency (either significant relationships or no significant relationships) between high school outcome indicators and the 44 category variables.

b. Category Relationships Appendix C illustrated that a large number of categories did not have an important association with the 23 outcome indicators. For example:

Number of Relationships	Cagegories with no important association
1	%ECH - percent change in school enrollment from previous year %OCLIC - percentage of occupational education classes taught by teachers outside their area of license/endorcement.
2	%FL - percentage of students participating in **foreign language**.
3	%PTC - percentage of students whose parents attended the first parent/teacher conference. NCS - number of students per counselor
4	%SCLIC - percentage of **science** classes taught by teachers outside their area of license/endorsement.
5	%T10 - percentage of teachers with 10 years experience.

Since a large number of categories did not reflect a significant relationship with a majority of the 23 outcome indicators, why were they included in the report card format?

There are a large number of important relationships between some categories and the 23 outcome indicators. For example,

Number of Relationships	Categories with a large number of associations
18	%DR - the overall dropout rate of the school in a combination of any grades 9-12.
17	%TR - percent transiency rate for school
16	NENG- overal class size in English
15	%EN-School enrollment as of official Fall Count %AT - percent attendance rate NCS- number of students per counselor %APPER- percentage of students participating in **advanced placement** programs.

c. **NO Relationships with Student Outcome.** Appendix C illustrated the number of categories with significantly negative, significantly positive, and no associations with the 23 student outcome indicators.

Thirty or more categories out of 44 had no significant relationship with any of the 23 student outcome measures. The 9th grade analysis suggested that 30 or more categories reflected no important association with the following outcome indicators:

9th Grade

1 O: RKMA- the national percentile rank of the school's average score on the standardized Comprehensive Test of Basic Skills of r grade nine in **math**.

2 O: RECT- increase or decrease (negative numbers) in the national percentile rank of the average score on the CTBS for the school at grade nine in **reading**.

3 O: MACT - increase or decrease (negative numbers) in the national percentile rank of the average score on the CTBS for the school at grade nine in **math**.

4 O: REBQ - the percentage of ninth grade students in a school that score in the bottom 25 percent (national) of scores on the CTBS in the area of **reading**.

5 O: RETQ- the percentage of ninth grade students in a school that score in the top 25 percent (national) of scores on the CTBS in the area of **reading**.

6 O: MATQ- the percentage of ninth grade students in a school that score in the top 25 percent (national) of scores on the CTBS in the area of **math**.

The 12th grade analysis suggested that 30 or more categories reflected no important association with the following outcomes:

12th Grade:

1. O: IDRE- change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **reading** sections of the High School Proficiency exam.
2. O: IDMA - change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **mathematics** sections of the High School Proficiency exam.
3. O: IDWR- change (increase or decrease) from the previous year in the percentage of a school's graduating class passing the **writing** sections of the High School Proficiency exam.

d. Positive and Negative associations Appendix D illustrated that eight of the twelve possible 9th grade outcome indicators had a larger number of categories with positive associations than negative associations including:

1. O: RKRE- the national percentile rank of the school's average score on the standardized Comprehensive Test of Basic Skills of r grade nine in **reading**.
2 O: RECT- increase or decrease (negative numbers) in the national percentile rank of the average score on the CTBS for the school at grade nine in **reading**.
3 O: MACT - increase or decrease (negative numbers) in the national percentile rank of the average score on the CTBS for the school at grade nine in **math**.
4 O: MABQ - the percentage of ninth grade students in a school that score in the bottom 25 percent (national) of scores on the CTBS in the area of **math**.
5 O: MATQ- the percentage of ninth grade students in a school that score in the top 25 percent (national) of scores on the CTBS in the area of **math**.
6 O: 9ID- the percent of ninth grade student proficient in **"ideas"**.
7 O: 9OR- the percent of ninth grade student proficient in **"organization"**.
8 O: 9CO - the percent of ninth grade student proficient in **"conventions"**.

About three of the eleven 12th grade outcome indicators had a larger number of categories with positive associations than negative associations including:

1. O: %WRPR- the percentage of graduating class passing the **writing** sections of the Nevada High School Proficiency exam.
2. O: %GSAT- percentage of graduating class taking the college **SAT** exam.
3. O: AACT- the average scores obtained on the **ACT** Composite.

Does this suggest that the categories selected for 9th grade were selected from a positive perspective (number of positive relationships outweigh the number of negative associations)? In contrast, were the 12th grade categories reflecting the high school exit exams (state criterion referenced writing exam and both college admissions tests) selected on the basis of negative associations (i.e., more categories with a negative association than with a positive association)?

Two regression models were used in the findings below , including Forward Stepwise Regression (SWR), and Exploratory Mixed Stepwise (EMS) regression (Forward and Backward). The

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authors will discuss the analyses' more important associations (highlights). For greater and clearer detail, the reader is urged to explore each regression model.

2. What report card areas (demographic, teachers, students, and expenditure) have an important relationship with different outcome areas?

Stepwise Regression (Forward) was used to examine the relationships between the report card areas and the student outcome areas. The large shaded boxes in Appendix E illustrate that no important associations exist between an outcome area and a category area. Table 1 also shows the category areas and outcome areas having no significant relationships with each other.

Note that in some of the boxes in Appendix E, only one significant relationship exists (indicated by a checkmark). For example, there is only one significant relationship when comparing the 6 demographic items with the 2 CTBS reading and math ranking outcome items (6 x 2 = 12 possible relationships). It is difficult to argue that a relationship exists between demographic items and CTBS reading and math rankings when only 1 of a possible 12 relationships in the box (or 8%) are significant.

3. Which of the 23 outcome indicators are influenced the most by the 44 report card categories?

Forward Stepwise Regression was used to calculate the percent of variance for each of the 23 outcome indicators by the 44 category variables. Table 2 and Appendix E suggested that the 44 categories account for an average of 76% (i.e., Adjusted r^2) of the variance of the outcome indicators. The percent of variance for the 23 outcome indicators ranged from 52% to 93%. However, the significant associations do not suggest any clear or consistent trends between different category areas and outcome areas, but are sparsely scattered in an apparently random manner.

4. What report card categories have an important relationship with each of the 23 outcome indicators?

Forward stepwise regression was used to examine the number of important associations among the 44 report card categories and the 23 outcome indicators. Totals for each category were sorted in descending order—see Appendix F. Table 3 illustrates the six categories with the largest number of associations to the 23 outcome indicators.

While 6 of the 44 report card categories reflected five or more important associations, 38 categories reflected four or less significant relationships with academic achievement. Also, many categories reflected both positive and negative relationships with student outcome.

ANY SIGNIFICANT RELATIONSHIP BETWEEN THE INDEPENDENT AND DEPENDENT VARIABLES USING ONE STATISTICAL TECHNIQUE SHOULD BE RE-CHECKED BY USING A SECOND STATISTICAL PROCEDURE. TO CONFIRM THE EARLIER STEPWISE REGRESSION ANALYSIS, THE AUTHORS ATTEMPTED TO USE EXPLORATORY MULTIPLE REGRESSION TO RE-EXAMINE THE RELATIONSHIPS BETWEEN REPORT CARD CATEGORIES AND THE 23 OUTCOME INDICATORS. THE AUTHORS OBSERVED THAT MANY OF THE CATEGORIES CONTAINED MISSING DATA, OR REFLECTED A LARGE PERCENTAGE OF DATA REFLECTING ZEROS. APPENDIX G ILLUSTRATES THAT EIGHT OF THE 44 REPORT CARD CATEGORIES REFLECTED A DISPROPORTIONATELY LARGE NUMBER OF ZEROS, RANGING FROM 16 TO 42. COULD MISSING DATA OR A LACK OF VARIANCE (ZEROS) HAVE AN IMPACT ON THE REGRESSION MODEL? SINCE THE

Table1. Category areas reflecting no association with the different outcome areas (refer to Appendix E).

Category Area		Grade	Outcome Area
Demographic	vs	12th	–NHSPE (reading, math, and writing) scores.
Teacher's			
Degrees	vs	9th	–CTBS national ranking (reading and math)
	vs	9th	–top / bottom 25 % CTBS (reading and math) scores
	vs	12th	–NHSPE (reading, math, and writing) scores
	vs	12th	–increase/decrease NHSPE (reading, math, and writing) scores
Experience	vs	9th	–CTBS national ranking (reading and math)
	vs	9th	–top / bottom 25 % CTBS (reading and math) scores
	vs	12th	–NHSPE (reading, math, and writing) scores
	vs	12th	–increase/decrease NHSPE (reading, math, and writing) scores
Oversize classes	vs	9th	–CTBS national ranking (reading and math)
	vs	9th	–increase/decrease CTBS (reading and math)
	vs	9th	–top / bottom 25 % CTBS (reading and math) scores
	vs	12th	–NHSPE (reading, math, and writing) scores
	vs	12th	–college admissions tests (e.g., ACT, SAT, etc.)
Licenses/endors.	vs	9th	–Nevada criterion-referenced (ideas, organization, voice, and conversation)
	vs	12th	–increase/decrease NHSPE (reading, math, and writing) scores
Expenditures			
Demographics	vs	9th	–CTBS national ranking (reading and math)
	vs	12th	–increase/decrease NHSPE (reading, math, and writing) scores
	vs	12th	–college admissions tests (e.g., ACT, SAT, etc.)
Source	vs	9th	–increase/decrease CTBS (reading and math) scores
	vs	9th	–top / bottom 25 % CTBS reading scores
	vs	9th	–top / bottom 25 % CTBS math scores
	vs	12th	–increase/decrease NHSPE (reading, math, and writing) scores
	vs	12th	–college admissions tests (e.g., ACT, SAT, etc.)

Table 2. The percent of variance (in descending order) for each outcome indicator as explained by the 44 report card categories (see Appendix E).

Grade	Outcome Indicator	Percent of Variance
9	O: 9CO (9th-conventions)	93%
12	O: ASATM (aver. SAT-math)	92%
9	O: 9OR (9th-organization)	89%
12	O: AACT (aver. ACT composite)	87%
12	O: %WRPR (12th-Writing-NHSPE)	85%
9	O: RECT (+ or -; nat. % CTBS-reading)	84%
9	O: MABQ (% Bot. 25%-CTBS-math)	84%
9	O: 9VO (9th-voice)	83%
9	O: 9ID (9th-ideas)	81%
12	O: %GACT (% grad. ACT exam)	81%
9	O: RKRE (nat. % rank-9th gr.-reading)	79%
9	O: RETQ (% Top 25%-CTBS-reading)	77%
12	O: %GSAT (% grad. SAT exam)	77%
9	O: RKMA (nat % rank-9th gr. - math)	72%
12	O: ASATV (aver. SAT. Verbal)	71%
9	O: REBQ (% Bot. 25%-CTBS-reading)	64%
12	O: %MAPR (12th-Math-NHSPE)	63%
12	O: %REPR (12th-Reading-NHSPE)	57%
9	O: MACT (+ or -; nat. % CTBS-math)	52%
9	O: MATQ (% Top. 25%-CTBS-math)	52%
12	O: IDRE (inc/dec. reading NHSPE)	•
12	O: IDMA (inc/dec. math NHSPE)	•
12	O: IDWR (inc/dec. writing NHSPE)	•

Table 3. Report card categories having a large number of associations with Nevada's 23 report card outcome indicators (see Appendix F).

Number of Associations	Category
• 9	– % **advanced placement** programs (#33)
• 7	– % **attendance** (#4)
• 7	– % of students whose parents attended the first **parent/teachers conference** (#35)
• 6	– dropout (#5)
• 6	– % students receiving **migrant** education (#26)
• 5	– foreign language (#32

GUTTMAN'S PARTIAL CORRELATIONS STATISTIC (A SECOND MULTIVARIATE STATISTICAL TREATMENT) REQUIRED COMPLETE DATA FOR ALL CATEGORIES, AND EACH DATA SET (CATEGORIES) NEEDED TO REFLECT A DEGREE OF NON-REDUNDANCY (MORE THAN JUST ZEROS), THIS TOO WAS REJECTED FOR EXAMINING THE RELATIONSHIPS BETWEEN THE INDEPENDENT AND DEPENDENT VARIABLE. THE AUTHORS ELIMINATED THE 8 "UNUSUAL" CATEGORIES (APPENDIX G) FROM FURTHER STUDY, AND USED THE "EXPLORATORY MIXED STEPWISE" (EMS) REGRESSION STATISTIC TO RE-EXAMINE THE RELATIONSHIPS BETWEEN STUDY'S INDEPENDENT AND DEPENDENT VARIABLES.

5. **After removing the eight categories having redundant or missing data, what report card areas** (demographic, teachers, students, and expenditure) **have an <u>important</u> relationship with different outcome indicators** (Table 4)**?**

Exploratory mixed stepwise (EMS) regression was used to re-examine the relationships between the report card category areas and the outcome areas. The large dark shaded areas illustrated in Appendix H represented that no important association existed between an outcome area and a category area. Although there were many boxes illustrating areas of no significant relationships, there were many other boxes with 1-3 significant relationships. The largest frequency of significant relationships were observed in the <u>demographic</u> and the <u>student</u> areas. The smallest frequency of significant relationships were in the <u>teacher</u> and <u>expenditure</u> areas.

6. **After removing the eight categories having redundant or missing data, which of the remaining 36 report card categories have the <u>largest and smallest percent of association</u> with the outcome indicators?**

After removing 8 of the 44 categories for further analysis, the exploratory mixed stepwise (EMS) regression was used to examine the percent of variance between each of the 23 outcome indicators and the remaining 36 report card categories. The largest percents of variance between the 23 outcome indicators and report card categories are listed in Table 5. The percents of variance had a range of 92%. The average percent of variance for the 23 outcome indicators was 61%. About six of the seven outcome indicators with a percent greater than 10% reflected 12th grade student achievement, while four of the five largest associations reflected 9th grade outcomes.

7. **After removing the 8 categories having redundant or missing data, what report card categories have an <u>important relationship</u> with each of the 23 outcome indicators?**

The number of significant relationships between each category were summed by 9th grade students outcomes, 12th grade students outcomes and total frequencies (Appendix I). Table 6 illustrated the categories with six or more significant associations with the 23 outcome indicators. Collectively, these reflected 3 student category areas, 2 demographic category areas, and 1 teacher category area.

8. **Are there differences in the categories' relationships with 9th grade and 12th grade outcomes?**

The number of significant associations for 9th and 12th grade outcomes were developed and compared. Several interesting observations can be gleaned from Appendix J. Some categories had a large association with 9th grade outcomes but marginal associations with 12th grade outcomes. These categories included percent of students participating in advanced placement programs (#33), percent of

Table 4. Category areas reflecting no association with the different outcome indicators, using exploratory mixed stepwise regression analysis. See Appendix H.

Category Area		Grade	Outcome Area
• **Teacher's**			
Degrees	vs	9th	–CTBS national ranking (reading and math)
	vs	9th	–increase/decrease CTBS (reading and math) scores
	vs	9th	–increase/decrease NHSPE (reading, math, and writing) scores
	vs	12th	–NHSPE (reading, math, and writing) scores
Experience	vs	9th	–CTBS national ranking (reading and math)
	vs	9th	–increase/decrease CTBS (reading and math) scores
	vs	9th	–increase/decrease NHSPE (reading, math, and writing) scores
	vs	12th	–NHSPE (reading, math, and writing) scores
Oversize classes	vs	9th	–increase/decrease CTBS (reading and math) scores
	vs	9th	–increase/decrease NHSPE (reading, math, and writing) scores
	vs	12th	–college admissions tests (e.g., ACT, SAT, etc.)
• **Expenditures**			
Demographic	vs	9th	–increase/decrease CTBS (reading and math) scores
	vs	12th	–NHSPE (reading, math, and writing) scores
	vs	12th	–increase/decrease NHSPE (reading, math, and writing) scores
Source			
	vs	9th	–increase/decrease CTBS (reading and math) scores
	vs	9th	–top / bottom 25 % CTBS (reading and math) scores
	vs	9th	–increase/decrease NHSPE (reading, math, and writing) scores

students whose parents attended the first parent/teacher conference (#35), school's per pupil expenditure for student support (#40), percent of students receiving English as a second language (#25), and percent of students participating in athletics (#34).

Some categories reflected approximately equal association between 9th and 12th grade outcome. These categories included:

- percent attendance (#4),
- percent dropout (#5),
- percent of students participating in a foreign language (#32),
- percent students participating in migrant education (#26),
- oversized classes in English (#15), and
- percent local expenditure (#41).

Table 5. Percent of variance for the 23 outcome indicators using exploratory mixed stepwise regression. See Appendix H.

Grade	Outcome Indicator	Percent of Variance
9	O: RETQ (% Top 25%-CTBS-reading)	92%
9	O: RKRE (nat. % rank-9th gr.-reading)	92%
12	O: %GACT (% grad. class-ACT exam)	87%
9	O: 9OR (9th-organization)	85%
12	O: %WRPR (12th-Writing-NHSPE)	82%
12	O: IDWR (inc/dec. writing NHSPE)	81%
9	O: 9ID (9th grade-ideas)	80%
9	O: MABQ (% Bot. 25%-CTBS-Math)	80%
12	O: ASATM (aver. SAT-Math)	74%
9	O: MATQ (% Top. 25%-CTBS-Math)	72%
9	O: 9VO (9th-voice)	66%
9	O: REBQ (% Bot. 25%-CTBS-reading)	66%
12	O: %MAPR (12th-Math-NHSPE)	64%
9	O: RKMA (nat % rank-9th gr. - math)	59%
9	O: 9CO (9th-conversations)	56%
12	O: %REPR (12th-Reading-NHSPE)	56%
12	O: ASATV (aver. SAT. Verbal)	52%
12	O: %GSAT (% grad. SAT exam)	43%
12	O: AACT (aver. ACT composite)	42%
12	O: IDRE (inc/dec. reading NHSPE)	39%
9	O: RECT (+ or -; nat. % CTBS-reading)	33%
9	O: MACT (+ or -; nat. % CTBS-math)	0%
12	O: IDMA (inc/dec. math NHSPE)	0%
	Average	**60.8%**

Table 6. Categories with a large number of significant associations with Nevada's 23 report card outcome indicators, using exploratory mixed stepwise regression. See Appendix I.

Number of Associations	Category
• 10	– % of students participating in **advanced placement** programs. (#33)
• 8	– % **Attendance**. (#4)
• 6	– **Dropout** rate. (#5)
• 6	– % of students participating in **foreign language**. (#32)
• 5	– Oversize class in **English.** (#15)
• 5	– % of student receiving **art** education. (#30)

When the SWR statistic examined the relationships, the percent of students participating in art education (#30) appeared to relate to 9th grade outcome, but the EMS model suggested that 12th grade outcome reflected the largest number of associations. Of the 13 categories reflecting 5 or more significant associations with student outcomes, 5 categories reflected a strong association with 9th grade outcomes, 1 (art) reflected an alternating finding (positive or negative depending on the regression model), and 7 categories had an approximate impact on both 9th and 12th grade academic achievement.

9. What categories have the most association with student outcomes?

Thirteen of 44 categories had a large (5 to 19 of 88 possible associations) significant association with student outcome (Good), 18 categories reflected 2 to 4 associations (Moderate), and 13 categories reflected 0 to 1 associations (Poor) (Appendix J).

VI. CONCLUSIONS

A. Most of Nevada's report card categories have no relationship to student outcomes.

About 58% of the 44 report card categories are not related to student outcome using univariate analysis (PPM: Appendix C). Using the more rigorous SWR and EMS regression analyses, only 6 categories reflected 5 or more significant relationships with the 23 outcome indicators (Appendix F and I).

SWR	EMR
% Adv Placement Programs (#33)	% Adv. Placement Programs (#33)
% Attendance (#4)	% Attendance (#4)
% St. Parent Conference (#35)	% Dropout rate (#5)
% Dropout rate (#5)%	St-Foreign Language (#32)
% St. Migrant Education (#26)	Oversize Class in English (#15)
% St-Foreigh Language (#32)	% St.-Art Education (#30)

Unfortunately, as with other report card studies, there are few associations between the independent variables and the dependent variables (student outcome).

B. Report cards and reported analyses of entries need to be simple, straight forward, and easy to understand.

To Nevada's credit, their report cards not only reported the relationships between categories and outcomes, they also reported a variety of statistical treatments (e.g., Table D1: multiple regression, partial correlations, p. 180) that examined relevant relationships between independent variables (categories) and dependent variables (student outcome). However, this study's multivariate statistical analysis demonstrated that relationships are not always easy to examine or understand. Some important questions need answering. Why didn't Nevada's report card report the 12th grade student outcomes' relationships with category data? How can partial correlations or multiple regressions be developed with missing or redundant data (Appendix G)? Why did report cards include 59% of the categories that had no relationship to outcome? If multiple regression or partial correlation statistics were applied to

Nevada's data, what was the "n" (1,2,3...?), or what regression model did they use? In 20 minutes or less, can a consumer or educator determine (after examining the report card) which of Nevada's high schools reflected the best, average, and worst student outcomes? Which report card categories had the most and least impact on the outcomes?

C. The Report Card's portrait of the impact of the educational process on graduating seniors is incomplete.

About 39% of the associations between report card categories and the twelve outcome indicators for 9th graders were significant, and about 43% of the associations between report card categories and the eleven outcome indicators for 12th graders were significant (PPM, Appendix C). This conventional (but unsophisticated) analysis reflected that more report card categories are related to 12th grade student achievement than 9th grade achievement. The more intricate and complex regression analysis models reflected just the opposite. Using the SWR analysis, there were 61 significant 9th grade associations and 35 significant 12th grade associations (almost a 2 to 1 ratio), while the EMS analysis suggested 52 significant 9th grade associations and 34 significant 12th grade relationships (Appendix J). When both the SWR and EMS analyses were summed by grade levels, there were 113 significant 9th grade associations and 69 significant 12th grade associations. However, multicollinearity has affected the study's findings. Were Nevada's report card designers more interested in 9th graders rather than 12th graders? Should Nevada's state department have performed more preliminary data analysis before using the current report card format? The 12th grade academic achievement represents the accumulation of the total educational process, but five of the eleven 12th grade outcome indicators related to college admissions, and 6 outcome indicators related to academic skills. This is not a very complete picture of the impact of the educational process on the student K-12.

D. Missing or redundant data produces misleading findings.

Incomplete data or redundant data can produce fallacious and specious associations. How unfortunate it would be if policymakers develop educational strategies based on misleading data analyses. Examine the three examples below (Appendix J):

1. **Art Education (#30)** In the %ART category (#30), the SWR analysis indicated that **art** had a moderate (3 associations) impact on 9th grade outcome (Appendix J) and a small (1 association) relationship with 12th grade outcome. The EMS analysis suggested an antithetical finding; art education had a moderate association with 12th grade outcome (4 associations) and a nominal (1 association) relationship with 9th grade student outcome.

2. **Music education (#29)** In the music education category (#29), the SWR analysis suggested that music education had a paltry (1 relationship) association to student outcome, but the EMS analysis suggested that it had <u>no</u> association with student outcome.

3. **% Occupational education (#23)** In the % occupational education category (#23), the SWR analysis suggested that it had a moderate association (3 relationships) with 9th grade student outcome and a small association with 12th grade outcome. Cumulatively, this category reflected 4 significant relationships signifying that occupational education category might represent an important category for policymakers to manage. The %OCLIC category's data reflected three

numbers: 20.8%, 16.6%, and 3.0% (Appendix G)--*HOW DO YOU MAKE CHICKEN SALAD WITH THREE CHICKEN FEATHERS*? How can regression models be of any value when 42 out of 45 high schools (93%) assigned a 0% for this category? Policymakers and educators need good data represented by a large "n".

These examples suggest that results of the analyses were impacted by the incompleteness of data. As a result, one could determine that these subject areas could easily be deleted from the curriculum.

E. This study suggests that the value of advanced degrees and teacher licenses may be a good deal less than it has been purported to be.

Percentage of teachers with masters' degrees had no relationship to any indicator of student outcome. Percentage of teachers with bachelors' degrees had a positive association to only 1 of 23 outcome indicators, and percentage of PHD degrees associated negatively with three outcome measures. Percentages of licenses and endorcements demonstrated positive associations with five outcome measures and negative associations with five others.

When the EMS analysis examined the associations related to teacher's degrees, the %TBA reflected two significant associations (one positive and one negative) to outcome, and the %TMA degrees reflected one association (Appendix I). The percent of PHDs was not examined in this analysis because 76% of the data was zero (Appendix G). The icense and endorsements categories (%ENLIC, %MALIC, %SCLIC, %SOLIC, and %OCLIC) were not examined because of the large percentage of ciphers (Appendix G).

Teaching experience and advanced degrees are strongly related. The PPM analysis suggested that %T10 (10 years experience) had a significantly positive relationship with %TMA (r=+.530). However, the SWR analysis suggested that the %T10 had a **small** negative association with student outcome (2 negative associations) (Appendix F), and the EMS analysis suggested <u>no</u> association with outcome (Appendix I). Since the teacher's advanced degrees, as a component of the notion of teacher experience, does not have a positive linkage with student outcome, why does Nevata legitimize (". . . programs to <u>encourage teachers to continue their own academic achievement</u>; ") the importance of advanced degrees? This is not a flattering reflection of postsecondary graduate education programs.

F. Teacher experience is misunderstood and overrated.

The SWR analysis suggested <u>1 positive and 3 negative</u> associations between the high school teacher's classroom experience (%TNE, S%T1-3, %T4-6, %T7-9, or %T10) and the student's academic achievement (5 categories x 23 outcome indicators = 115 possible relationships) (Appendix E). The EMS analysis suggested four <u>negative</u> associations between teacher's experience and student outcome. In education, the number of years of experience is often strongly connected to the teacher's salary schedule. If experience does not have a strong positive association with outcome, should teachers' salaries be determined by factors other than years of experience or the number of degrees earned? In business, one hires the <u>best</u> salesman and not the <u>most</u> experienced salesman (e.g., *a car salesman's salary is determined by the number of cars sold and not the number of years he/she sold cars.).*

G. **Parental involvement at the high school level, as it is portrayed and reported in Nevada, is minimally linked to academic achievement.**

The univariate analysis suggested a marginally negative association between %of students whose parents attended the first parent teacher conference (%PTC) and the 9th grade MABQ, a positive association with 12th grade IDRE, and no important association with the other 21 high school outcome indicators . The SWR analysis reflected that %PTC had *negative* associations with three of the 9th grade CTBS reading indicators (RECT, REBQ, and MABQ), and a *positive* association with two other 9th grade indicators (9ID and 9CO). The %PTC was positively associated with %MAPR (12 grade NHSPE score) and %GACT (college admissions tests). Collectively, the three negative, four positive, and 16 neutral associations do not make a persuasive argument for including %PTC as a legitimate and viable report card category. The EMS analysis suggested that %PTC was negatively associated with REBQ and MABQ (two 9th grade CTBS reading tests), and positively associated with MATQ (9th grade CTBS math) and 9ID.

Could Nevada be reporting the wrong data regarding parent involvement? Many important and relevant questions related to **parent involvement** and educational participation with their children could be gathered, analyzed, and reported. **Percent attendance** reflected the second largest number of positive associations with outcome. The % dropout rate analysis reflected the third largest number (negative) of associations with outcome. Issues relating to personal responsibility and consistency are the cornerstones of these categories. Nevada might also have asked:

- How many hours per week does the parent(s) spend with the child working on academic related activities (homework, monitoring student's grades, etc.)?
- How many academically or culturally enriched activities (concerts, plays, lectures, special, enriching books, etc.) per week/month does the parent(s) provide for the child?
- How many times per month does the parent(s) communicate with the child's teacher(s)?
- What are the parent's academic, social, cultural, ethic/moral aspirations and expectations for their child?
- How much encouragement does the parent(s) give the child?
- How often has the child had a discipline-related problem (drugs, alcohol, general discipline, etc,.)? How did the parent(s) remediate this problem?

These questions represent a range of important parental involvements that must be explored in further research.

H. **Important, relevant, and insightful educational observations, findings, and conclusions can be gleaned from demographic, teacher, student, and expenditure related categories.**

Generally, all report card areas reflect some categories that have an important association with student outcome: demographic and student categories seem to have the largest number and have more impact on student outcome than teacher and expenditure categories. Student categories represented five of the seven categories with the most associations with student outcome (Appendix J). Teacher and expenditure related categories reflected the least number of associations with outcome. Generalizations can be and often are misleading. Nevada's report card format should go through a constant improvement process: new categories should be added and worthless categories should be eliminated. The total selection and evaluation process (Nevada is one of the leaders in the country in reporting all

aspects of the report card analysis) should be fully disclosed to the public, and the public (educators, parents, board members, politicians, etc.) should be consistently involved and consulted in the development and assessment of more meaningful report card categories.

I. **In essence, there are probably too many indicators now entered in Nevada's report card. Fewer indicators around which meaningful improvement activities can be clustered would be more helpful to educators, parents, and policymakers.**

Although Nevada has an impressive, comprehensive, and varied number of both 9th and 12th grade high school outcome indicators, how informative is it for educators to examine CTBS scores from four perspectives including: national ranking, increase or decrease in the national percentile rank, the percentage of 9th graders who scored in the bottom 25 percentile, and the percent of 9th graders who scored in the top 25 percentile? After scanning Nevada's 47 high school report cards, the consumer can only have a superficial or partial understanding of student performance in school X and school Y, and an even lesser understanding of the relationships between those schools.

The authors developed z-scores and ranks for the 45 high schools' 23 outcome indicators (Appendix K). After examining the 47 high schools' 9th grade outcomes, 12th grade outcomes, and total high schools' relative ratings and rankings, are relationships between the different high schools more easily understood? Now, can a consumer easily identify the top, bottom, or average schools? Even when the student's academic achievement has been distilled down to an understandable format, how realistic is it to expect an educator to manage all 23 outcomes? If its nice to know, it's got to go!

VII. A "Sweet-and-Sour" Discussion

The study's findings might generate some interesting, potentially controversial conclusions, but result in some unconventional educational solutions. For example, what would happen if:

- advanced placement classes were used as the model for designing all other high school class experiences (smaller student/teacher ratio, individualized instruction, high academic expectations, etc.);
- local community members were encouraged to have a greater interest and responsibility for their their local schools in a variety of ways;
- school boards, administrators, and community members de-emphasized the teacher's advanced degrees and years of experience when evaluating them for a salary increase or tenure;
- teachers' promotions, salaries, and tenure were linked to their student's mastery of identifiable and measurable educational skills;
- teachers no longer needed licences or endorsement to teach any secondary class.

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A True Story: Once, in a small rural southern town, the high school chemistry/physics teacher quit teaching for the remainder of the school year because she was diagnosed with cancer. Since chemistry or physics teachers were scarce, the local school tried, but failed to find a replacement for the

last half of the school year. A local physician, hearing of the school's problem, offered to teach the two classes. The doctor's academic background included graduating from undergraduate school in three years with an "A" average, was the top (academic) student in his class in medical school, and completed his internship at Harvard medical school. The local superintendent turned down the doctor's free offer because the doctor had not passed the National Teacher Exam, was not state certified to teach chemistry and physics, and had never taken any education classes in college. For the remainder of the year, the doctor's son sat in the chemestry and physics classes taught by a substitute teacher who was an English major in college. To this day, the doctor has never forgot this incident: to this day he is still frustrated with public education and with educational administrators.

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IX. NOTES

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Appendix A

Descriptive Statistics for
Nevada's 44 Report Card Categories (1992-93)

		Number	Mean:	Std. Dev.:	Minimum:	Maximum:	Range:
1	%EN (Enrollment)	45	1180.7	953.3	70	2952	2882
2	%ECH (% Enrollment Change)	45	5.7	12.5	-25.4	49.9	75.3
3	%TR (Transiency rate)	45	26.1	10.4	0	57	57
4	%AT (%Attendance)	45	91.8	2.6	84.7	97.9	13.2
5	%DR (dropout rate)	45	6.4	6.6	0	44.4	44.4
6	NCS (no. students/counselor)	44	351.2	94.8	138	544	406
7	%TBA (% teacher with BA's)	45	53.1	22.0	19	100	81
8	%TMA (% teachers with MA's)	45	46.1	22.3	0	81	81
9	%TPHD (% teachers with PHD's)	45	.7	2.0	0	10	10
10	%TNE (% new teachers)	45	6.3	6.0	0	25	25
11	%T1-3 (Teachers with 1-3 yrs exp.)	45	18.8	9.3	0	50	50
12	%T4-6 (Teachers with 4-6 yrs exp.)	45	12.0	5.8	0	24	24
13	%T7-9 (Teachers with 7-9 yrs exp.)	45	9.7	5.3	0	20	20
14	%T10 (Teachers with 10 yrs exp.)	45	53.3	14.3	12	95	83
15	NENG (Oversize class in Eng.)	43	23.1	5.2	8.5	30.1	21.6
16	NMAT (Oversize class in Math)	43	22.1	6.5	6.4	29.1	22.7
17	NSC (Oversize class in Science.)	43	22.5	6.7	6.2	30.8	24.6
18	NSS (Oversize class in social science)	43	24.0	5.7	10.7	38	27.3
19	%ENLIC (% Eng. -teachers out. area)	45	1.1	3.6	0	20	20
20	%MALIC (% Math-teachers out. area)	45	1.2	6.2	0	40	40
21	%SCLIC (% Science-teachers out area)	45	.7	1.9	0	9	9
22	%SOLIC (% soc. scie. -teachers out area)	45	.6	1.9	0	11.1	11.1
23	%OCLIC (% occ. ed.-teacher out area)	45	.9	3.9	0	20.8	20.8
24	%SP (% St. spec. ed.)	44	8.4	4.1	2.7	21.1	18.4
25	%ESL (% St.- Eng. second Lang.)	44	2.2	2.8	0	10.8	10.8
26	%MIG (% St - migrant ed.)	44	.3	.7	0	3.1	3.1
27	%GIF (% St. -gifted and Tal Ed.)	43	2.7	2.8	0	10.9	10.9
28	%FRL (% St.-Free/reduced Lunch)	44	10.9	11.7	0	43.2	43.2
29	%MUS (% St. -music ed.)	44	15.5	10.4	0	63.7	63.7
30	%ART (% St.-art ed.)	44	22.6	10.5	0	42.2	42.2
31	%OC (% St-occup. ed.)	44	32.5	33.4	0	100	100
32	%FL (% St. -Foreign Lang.)	43	26.1	12.9	0	54	54
33	%APPER (% Adv. Placment Prog.)	44	5.9	7.3	0	31	31
34	%ATH (% St. part. Athletics)	44	43.8	22.7	0	92	92
35	%PTC (% St-Par. p/t conference)	27	48.4	24.1	9	100	91
36	$INST (per pupil expenditure)	44	3158.3	882.9	2204	6093	3889
37	$ADMIN (Sch's per pupil expend. for Admin.)	44	777.0	401.9	338	2293	1955
38	$BLDG (Sch.'s /pupil expenditure for building)	44	740.8	335.1	294	1814	1520
39	$SFSO (Sch's per expend. for staff support)	43	176.6	105.7	76	694	618
40	$STSP (sch's per pupil exp. for student support)	44	502.7	128.8	171	891	720
41	%LOC (% expenditures -local)	45	51.4	15.7	17.9	69.8	51.9
42	%ST (% expenditures - state)	45	40.6	14.5	0.3	72.3	72
43	%FED (% expenditures-Federal)	45	3.2	1.9	0.4	13.4	13
44	%$OPE (% expenditures-opening balance sources)	45	4.7	5.0	1	30.1	29.1

Appendix B

Descriptive Statistics
for Nevada's 23 Outcome Indicators

		Number	Mean:	Std. Dev.:	Minimum:	Maximum:	Range:
1	O: RKRE (nat. % rank-9th gr.-reading)	42	55.8	9.6	26	71	45
2	O: RKMA (nat % rank-9th gr. - math)	42	54.7	10.6	21	75	54
3	O: RECT (+ or -; nat. % CTBS-reading)	38	-0.4	7.3	-12	19	31
4	O: MACT (+ or -; nat. % CTBS-math)	38	0.0	7.2	-14	14	28
5	O: REBQ (% Bot. 25%-CTBS-reading)	42	17.5	8.2	5	50	45
6	O: RETQ (% Top 25%-CTBS-reading)	42	28.1	8.9	7	43	36
7	O: MABQ (% Bot. 25%-CTBS-Math)	42	21.2	9.7	7	55	48
8	O: MATQ (% Top. 25%-CTBS-Math)	42	30.3	10.9	7	50	43
9	O: 9ID (9th-ideas)	41	66.7	11.2	22	85	63
10	O: 9OR (9th-organization)	41	64.0	12.8	20.2	82	61.8
11	O: 9VO (9th-voice)	41	79.4	10.6	27.8	100	72.2
12	O: 9CO (9th-conversations)	41	72.5	12.5	18	90	72
13	O: %REPR (12th-Reading-NHSPE)	44	96.9	5.9	62.9	100	37.1
14	O: %WRPR (12th-Writing-NHSPE)	44	96.8	6.4	57.6	100	42.4
15	O: %MAPR (12th-Math-NHSPE)	44	97.8	6.3	58.3	100	41.7
16	O: IDRE (inc/dec. reading NHSPE)	29	0.2	3.7	-5.6	14.7	20.3
17	O: IDMA (inc/dec. math NHSPE)	29	0.3	3.4	-4.7	15.5	20.2
18	O: IDWR (inc/dec. writing NHSPE)	29	-0.3	2.0	-4.4	5.6	10
19	O: %GACT (% grad. ACT exam)	41	44.9	15.5	2	92	90
20	O: %GSAT (% grad. SAT exam)	38	28.3	18.4	0	71	71
21	O: AACT (aver. ACT composite)	41	20.8	1.3	17.1	23	5.9
22	O: ASATM (aver. SAT-Math)	36	472.8	51.3	270	521	251
23	O: ASATV (aver. SAT. Verbal)	36	425.8	32.2	310	477	167

Pearson Product Moment

Associations Between Nevada's 44 Report Card categories and 23 Outcome Indicators

Report Card Categories		9th Grade												12th Grade									
Outcome Indicators →		O: RKRE (nat. % rank-9th gr.-reading)	O: RKMA (nat'l % rank-9th gr. - math)	O: RECT (+ or -; nat. % CTBS-reading)	O: MACT (+ or -; nat. % CTBS-math)	O: REBQ (% Bot. 25%-CTBS-reading)	O: RETQ (% Top 25%-CTBS-reading)	O: MABQ (% Bot. 25%-CTBS-Math)	O: MATQ (% Top. 25%-CTBS-Math)	O: 9ID (9th-ideas)	O: 9OR (9th-organization)	O: 9VO (9th-voice)	O: 9CO (9th-conventions)	%REPR (12th-Reading-NHSPE)	%WRPR (12th-Writing-NHSPE)	%MAPR (12th-Math-NHSPE)	O: IDRE (in/dec. reading NHSPE)	O: IDMA (in/dec. math NHSPE)	O: IDWR (in/dec. writing NHSPE)	%GACT (% grad. ACT exam)	%GSAT (% grad. SAT exam)	AACT (aver. ACT composite)	ASATM (aver. SAT-Math)	ASATV (aver. SAT- Verbal)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	%EN	-.22	.17	.17	.14	-.15	.21	-.43	.34	-.46	-.55	-.50	-.56	-.31	-.21	-.49	-.31	.31	-.31	-.48	-.29	-.44	.49	.23
2	%ENC	.19	.19	.25	.03	-.19	.36	-.22	.11	.02	.09	.09	.22	-.02	-.14	.06	.08	.04	.25	.05	-.01	-.22	-.10	-.15
3	%TR	-.70	-.53	-.19	-.04	.46	.23	-.04	-.40	-.61	-.70	-.68	-.87	-.65	-.59	-.71	-.40	-.14	-.53	-.73	-.42	-.22	.56	.56
4	%AT	.51	.20	-.08	-.36	-.25	.24	.12	.09	.86	.90	.68	.76	.66	.47	.65	.53	-.16	.48	.43	.31	.43	-.39	-.21
5	%DR	-.67	-.40	-.21	.07	.42	-.44	.07	-.39	-.60	-.60	-.54	-.78	-.67	-.69	-.69	-.46	-.35	-.59	-.63	-.50	-.45	.19	.14
6	NCS	.01	.36	-.04	.19	-.20	.26	-.69	.27	.19	.14	.18	-.09	-.06	-.28	.04	.00	-.22	.07	.00	-.58	-.35	.17	.15
7	%TBA	.20	.04	-.12	.06	.16	-.22	.28	-.12	.31	.41	.53	.54	.21	.25	.46	.05	-.21	.27	.61	.17	.14	-.72	-.56
8	%TMA	-.17	-.03	.13	-.06	-.19	.25	-.29	.13	-.28	-.39	-.52	-.51	-.19	-.24	-.43	-.04	.21	-.25	-.59	-.17	-.13	.72	.56
9	%TPHD	-.56	-.20	-.05	.11	.35	-.36	.03	-.07	-.53	-.59	-.54	-.68	-.43	-.22	-.66	-.34	.21	-.62	-.52	-.16	-.41	.21	.05
10	%TNE	-.14	-.13	-.08	.06	.21	-.39	.42	-.18	-.25	-.16	.20	-.05	-.23	-.17	-.14	-.25	-.14	-.20	.27	.06	-.21	-.35	-.41
11	%T1-3	-.34	-.07	.02	-.24	.12	.05	-.09	.14	-.35	-.46	-.06	-.34	-.21	-.12	-.26	.03	.58	.00	-.06	.01	-.68	.07	-.19
12	%T4-6	.17	.30	.14	.35	.07	-.04	-.13	.30	.15	.19	.30	.43	.26	.51	.45	-.03	.10	.22	.59	.10	-.05	-.50	-.47
13	%T7-9	.32	.19	.30	.25	-.01	-.13	.09	-.02	.19	.36	.04	.44	.14	.25	-.02	-.16	-.17	-.25	.27	.10	.36	-.29	-.19
14	%T10	.11	-.08	-.13	-.07	-.19	.19	-.11	-.12	.21	.16	-.19	-.08	.08	-.12	.06	.14	-.30	.07	-.41	-.11	.44	.41	.55
15	NENG	-.20	.01	.30	.37	-.07	.03	-.42	.03	-.54	-.54	-.68	-.50	-.36	-.30	-.52	-.38	.03	-.36	-.63	-.45	-.16	.45	.36
16	NMAT	-.34	.04	.09	.14	-.04	.10	-.49	.14	-.53	-.60	-.60	-.65	-.39	-.41	-.52	-.27	.14	-.31	-.57	-.48	-.40	.54	.38
17	NSC	-.24	.15	.11	.38	-.10	.09	-.58	.19	-.56	-.59	-.58	-.57	-.37	-.34	-.41	-.41	.03	-.25	-.53	-.60	-.34	.40	.27
18	NSS	-.13	.13	.34	.39	-.13	.00	-.36	.15	-.50	-.47	-.59	-.48	-.30	-.24	-.57	-.43	.03	-.47	-.58	-.39	-.11	.43	.30
19	%ENLIC	.54	.15	.12	-.08	-.45	.21	.45	.13	.17	.22	.31	.43	.28	.40	.18	.04	.26	.08	.32	.59	.32	-.07	-.19
20	%MALIC	.02	.10	.17	.41	-.20	-.01	-.19	.13	-.22	-.25	-.24	-.04	.11	.16	.17	.12	.27	.25	-.30	-.02	-.18	-.09	-.18
21	%SCLIC	-.03	.16	.36	-.15	.05	.19	-.10	.30	.51	.43	.18	.10	.23	.15	.03	.25	-.04	.03	-.16	.15	-.12	-.05	-.06
22	%SOLIC	.50	.09	.39	-.02	-.32	.12	.57	.10	.18	.23	.44	.45	.23	.23	.19	.13	.19	.19	.47	.73	.38	-.09	-.19
23	%OCLIC	-.12	-.16	.29	-.15	.10	.06	.03	-.10	-.15	-.19	.03	-.13	-.22	-.37	-.19	-.09	.16	.17	.00	.07	-.14	.14	.09
24	%SP	.25	-.17	-.01	.17	.04	-.31	.64	-.34	.08	.30	.34	.36	.00	.08	.22	-.14	-.28	.10	.37	.35	.41	-.45	-.35
25	%ESL	-.72	-.48	-.18	-.33	.63	-.48	.17	-.29	-.27	-.35	-.37	-.60	-.29	-.10	-.60	-.06	.24	-.60	-.40	-.09	-.31	.20	.17
26	%MIG	-.05	.39	-.18	.05	.17	-.28	-.45	.24	.29	.38	.35	.31	.33	.40	.28	.06	.14	.15	.23	-.46	-.47	-.91	-.87
27	%GIF	.65	.47	.50	.34	-.71	.46	.13	.47	.02	.05	.10	.22	.13	.06	.04	-.19	.01	.05	.09	.44	.35	.30	.11
28	%FRL	.27	-.19	-.14	.28	.05	-.07	.52	-.34	.01	.09	.29	.33	-.06	-.10	.33	-.18	-.57	.19	.45	.29	.55	-.19	.05
29	%MUS	-.19	.10	-.17	-.03	.35	-.21	-.45	-.04	.36	.40	.04	.25	.26	.24	.25	.30	-.03	.14	.07	-.39	-.22	-.54	-.34
30	%ART	.16	.12	.07	.03	.10	-.33	.15	-.09	.48	.57	.17	.48	.45	.61	.22	.23	.17	-.04	.14	.20	.24	-.60	-.48
31	%OC	.33	.00	-.14	.03	-.06	-.18	.48	-.23	.42	.51	.45	.52	.17	.11	.39	.04	-.38	.23	.36	.29	.35	-.58	-.45
32	%FL	-.02	-.13	.00	.21	.07	.25	-.28	-.13	-.21	-.22	-.28	-.09	-.19	-.23	.01	-.13	-.33	.04	.09	-.19	.25	.41	.59
33	%APPER	.23	.47	.33	.24	-.56	.55	-.51	.61	.26	-.31	-.22	-.16	.06	.03	-.06	-.06	.27	.03	-.19	-.09	-.25	.48	.24
34	%ATH	.50	.02	.12	-.22	-.19	.02	.53	-.07	.62	.69	.54	.71	.53	.47	.49	.48	.03	.32	.48	.69	.54	-.32	-.23
35	%PTC	-.12	.05	-.02	-.21	.06	.09	-.39	.02	.30	.27	.16	.09	.16	-.01	.14	.52	.06	.18	-.11	-.16	-.24	.00	.05
36	$INST	.52	.05	.06	-.12	-.24	.00	.62	-.02	.44	.51	.57	.62	.40	.42	.42	.23	.03	.24	.56	.69	.52	-.31	-.26
37	$ADMIN	.53	.02	.21	-.07	-.32	.04	.69	-.06	.38	.44	.38	.50	.27	.28	.22	.13	.01	.10	.32	.75	.57	-.13	-.16
38	$BLDG	.39	.21	.06	.07	-.16	-.20	.33	.04	.34	.47	.54	.56	.35	.38	.35	.07	-.01	.19	.44	.26	.18	-.68	-.67
39	$SFSO	.28	-.00	-.07	-.33	.00	-.13	.45	-.18	.71	.74	.38	.55	.38	.35	.34	.40	-.02	.19	.20	.46	.39	-.43	-.31
40	$STSP	.37	-.10	.06	-.16	-.27	.00	.71	-.20	.41	.42	.22	.28	.09	.01	.07	.07	-.16	.03	-.01	.59	.46	-.09	-.12
41	%$LOC	.14	.28	.39	-.16	-.30	.21	-.09	.49	.05	-.10	.04	-.01	.27	.41	-.14	.18	.75	-.09	.06	.31	-.16	.27	-.01
42	%$ST	-.35	-.27	-.40	.11	.35	-.17	-.16	-.44	-.09	-.06	-.28	-.29	-.39	-.55	-.07	-.20	-.65	-.03	-.34	-.54	-.07	-.07	.16
43	%$FED	-.33	-.32	-.15	.15	.25	.09	-.16	-.20	-.51	-.58	-.40	-.46	-.42	-.43	-.21	-.24	-.25	-.12	-.18	-.24	.04	.58	.59
44	%$OPE	.52	.13	.14	.05	-.21	-.03	.53	.06	.32	.41	.58	.63	.37	.45	.43	.12	.09	.24	.63	.60	.44	-.41	-.38
	"s" Sign. Relationships	20	9	10	9	12	8	24	10	25	28	25	28	18	19	20	12	9	10	26	25	24	28	19
	"s" Not Sign. Related	24	35	34	35	32	36	20	34	19	16	19	16	26	25	24	32	35	34	18	19	20	16	25

The Percentage of categories having a significant association with the 9th or 12th grade outcome indicators → 9th Grade = 39.4% VS 12th Grade = 43.3%

Shaded Area = No Significant Relationship (r = ± .288: 2-tailed)

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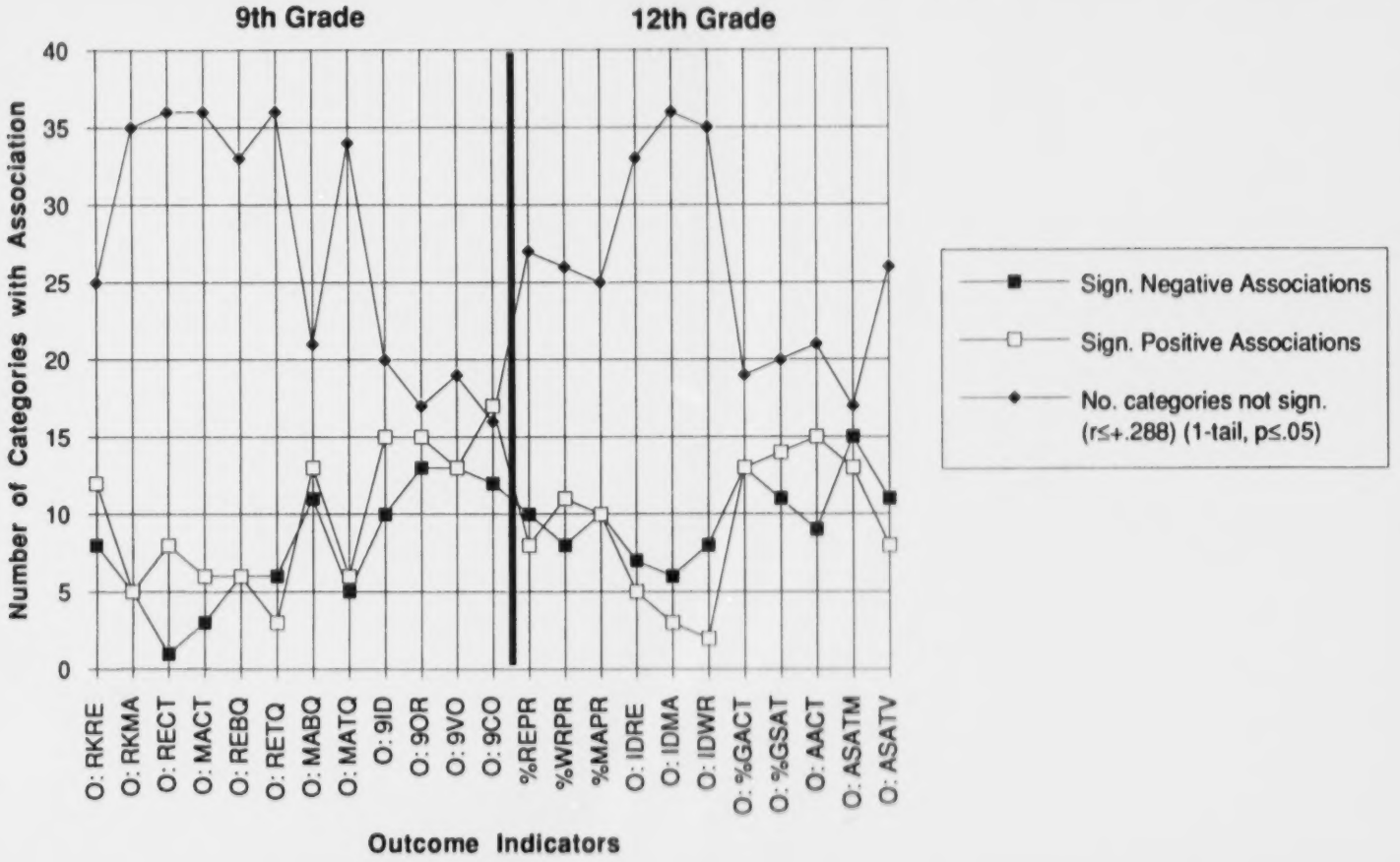
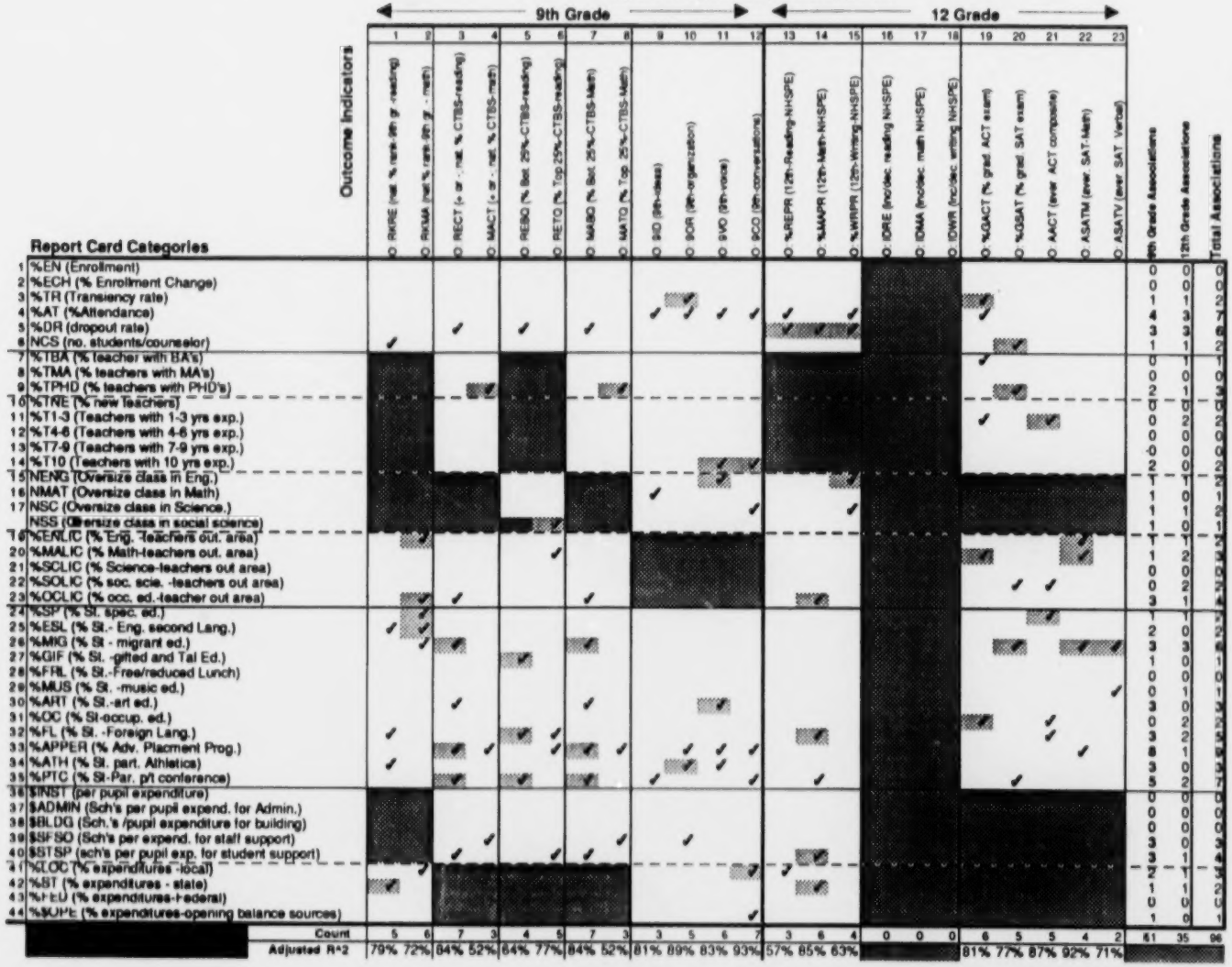
Appendix D

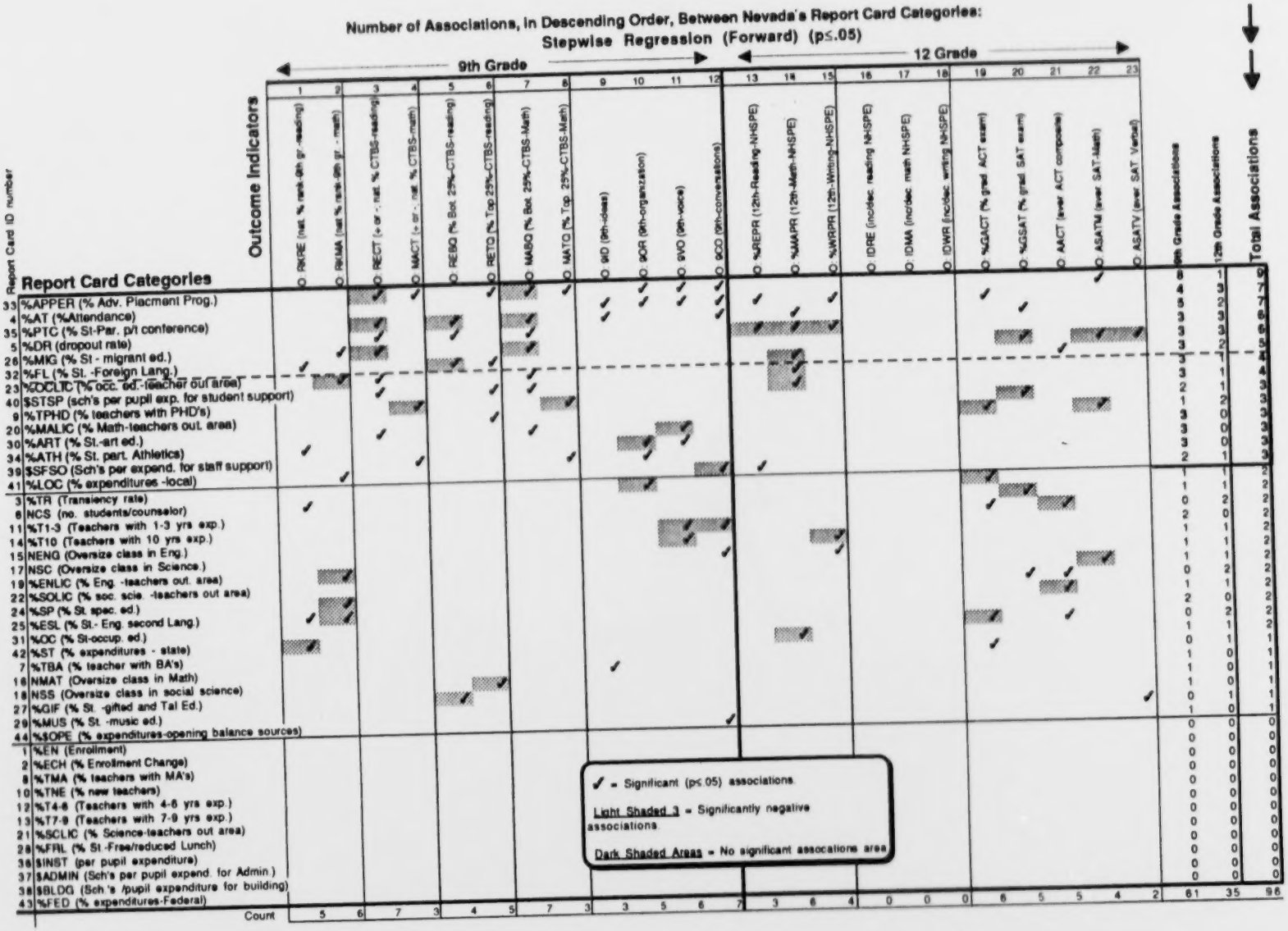
Number of Categories with Associations to the 23 Outcome Indicators: Pearson Product Moment



Associations Between Nevada's 44 Report Card Categories and 23 Outcome Indicators:
Stepwise Regression (Forward) (p≤.05)


9th Grade
12 Grade
Outcome Indicators
Report Card Categories
1 %EN (Enrollment)
2 %ECH (% Enrollment Change)
3 %TR (Transiency rate)
4 %AT (%Attendance)
5 %DR (dropout rate)
6 NCS (no. students/counselor)
7 %TBA (% teacher with BA's)
8 %TMA (% teachers with MA's)
9 %TPHD (% teachers with PHD's)
10 %TNE (% new Teachers)
11 %T1-3 (Teachers with 1-3 yrs exp.)
12 %T4-6 (Teachers with 4-6 yrs exp.)
13 %T7-9 (Teachers with 7-9 yrs exp.)
14 %T10 (Teachers with 10 yrs exp.)
15 NENG (Oversize class in Eng.)
16 NMAT (Oversize class in Math)
17 NSC (Oversize class in Science.)
18 NSS (Oversize class in social science)
19 %ENLIC (% Eng. -teachers out. area)
20 %MALIC (% Math-teachers out. area)
21 %SCLIC (% Science-teachers out area)
22 %SOLIC (% soc. scie. -teachers out area)
23 %OCLIC (% occ. ed.-teacher out area)
24 %SP (% St. spec. ed.)
25 %ESL (% St.- Eng. second Lang.)
26 %MIG (% St - migrant ed.)
27 %GIF (% St. -gifted and Tal Ed.)
28 %FRL (% St.-Free/reduced Lunch)
29 %MUS (% St. -music ed.)
30 %ART (% St.-art ed.)
31 %OC (% St-occup. ed.)
32 %FL (% St. -Foreign Lang.)
33 %APPER (% Adv. Placement Prog.)
34 %ATH (% St. part. Athletics)
35 %PTC (% St-Par. p't conference)
36 $INST (per pupil expenditure)
37 $ADMIN (Sch's per pupil expend. for Admin.)
38 $BLDG (Sch.'s /pupil expenditure for building)
39 $SFSO (Sch's per expend. for staff support)
40 $STSP (sch's per pupil exp. for student support)
41 %LOC (% expenditures -local)
42 %ST (% expenditures - state)
43 %FED (% expenditures-Federal)
44 %OPE (% expenditures-opening balance sources)
Count
Adjusted R^2
9th Grade Associations
12th Grade Associations
Total Associations

Appendix F

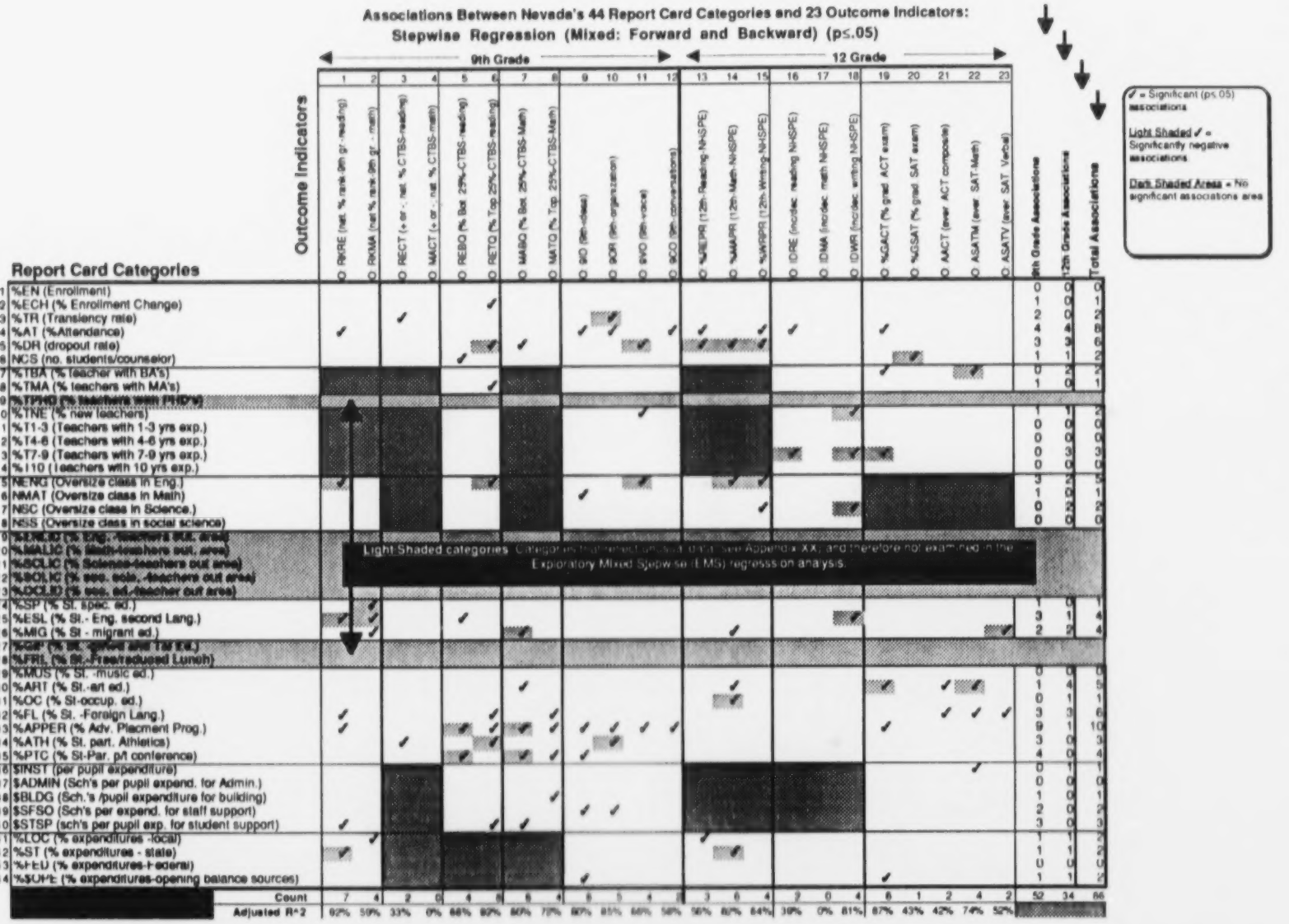

Number of Associations, In Descending Order, Between Nevada's Report Card Categories:
Stepwise Regression (Forward) (p≤.05)
9th Grade
12 Grade
Report Card ID number
Report Card Categories
Outcome Indicators
%APPER (% Adv. Placment Prog.)
%AT (%Attendance)
%PTC (% St-Par. p/t conference)
%DR (dropout rate)
%MIG (% St - migrant ed.)
%FL (% St. -Foreign Lang.)
%OCLIC (% occ. ed.-teacher out area)
$STSP (sch's per pupil exp. for student support)
%TPHD (% teachers with PHD's)
%MALIC (% Math-teachers out. area)
%ART (% St.-art ed.)
%ATH (% St. part. Athletics)
$SFSO (Sch's per expend. for staff support)
%LOC (% expenditures -local)
%TR (Transiency rate)
NCS (no. students/counselor)
%T1-3 (Teachers with 1-3 yrs exp.)
%T10 (Teachers with 10 yrs exp.)
NENG (Oversize class in Eng.)
NSC (Oversize class in Science.)
%ENLIC (% Eng. -teachers out. area)
%SOLIC (% soc. scie. -teachers out area)
%SP (% St. spec. ed.)
%ESL (% St.- Eng. second Lang.)
%OC (% St-occup. ed.)
%ST (% expenditures - state)
%TBA (% teacher with BA's)
NMAT (Oversize class in Math)
NSS (Oversize class in social science)
%GIF (% St. -gifted and Tal Ed.)
%MUS (% St. -music ed.)
%$OPE (% expenditures-opening balance sources)
%EN (Enrollment)
%ECH (% Enrollment Change)
%TMA (% teachers with MA's)
%TNE (% new teachers)
%T4-6 (Teachers with 4-6 yrs exp.)
%T7-9 (Teachers with 7-9 yrs exp.)
%SCLIC (% Science-teachers out area)
%FRL (% St.-Free/reduced Lunch)
$INST (per pupil expenditure)
$ADMIN (Sch's per pupil expend. for Admin.)
$BLDG (Sch 's /pupil expenditure for building)
%FED (% expenditures-Federal)
Count
%KRE (nat. % rank-9th gr.-reading)
%KMA (nat % rank-9th gr. - math)
%ECT (+ or - nat. % CTBS-reading)
%MCT (+ or - nat. % CTBS-math)
%EBO (% Bot. 25%-CTBS-reading)
%ETO (% Top 25%-CTBS-reading)
%ABO (% Bot. 25%-CTBS-Math)
%ATO (% Top 25%-CTBS-Math)
9tD (9th-ideas)
9OR (9th-organization)
9VO (9th-voice)
9CO (9th-conversations)
%REPR (12th-Reading-NHSPE)
%MAPR (12th-Math-NHSPE)
%WRPR (12th-Writing-NHSPE)
IDRE (incidec. reading NHSPE)
IDMA (incridec math NHSPE)
IDWR (incidec writing NHSPE)
%GACT (% grad ACT exam)
%GSAT (% grad SAT exam)
AACT (aver ACT composite)
ASATM (aver SAT-Math)
ASATV (aver SAT Verbal)
9th Grade Associations
12th Grade Associations
Total Associations
✓ = Significant (p≤.05) associations
Light Shaded 3 = Significantly negative associations
Dark Shaded Areas = No significant associations area

Nevada's Report Card Categories that are difficult to analyze because of "0" or missing data.

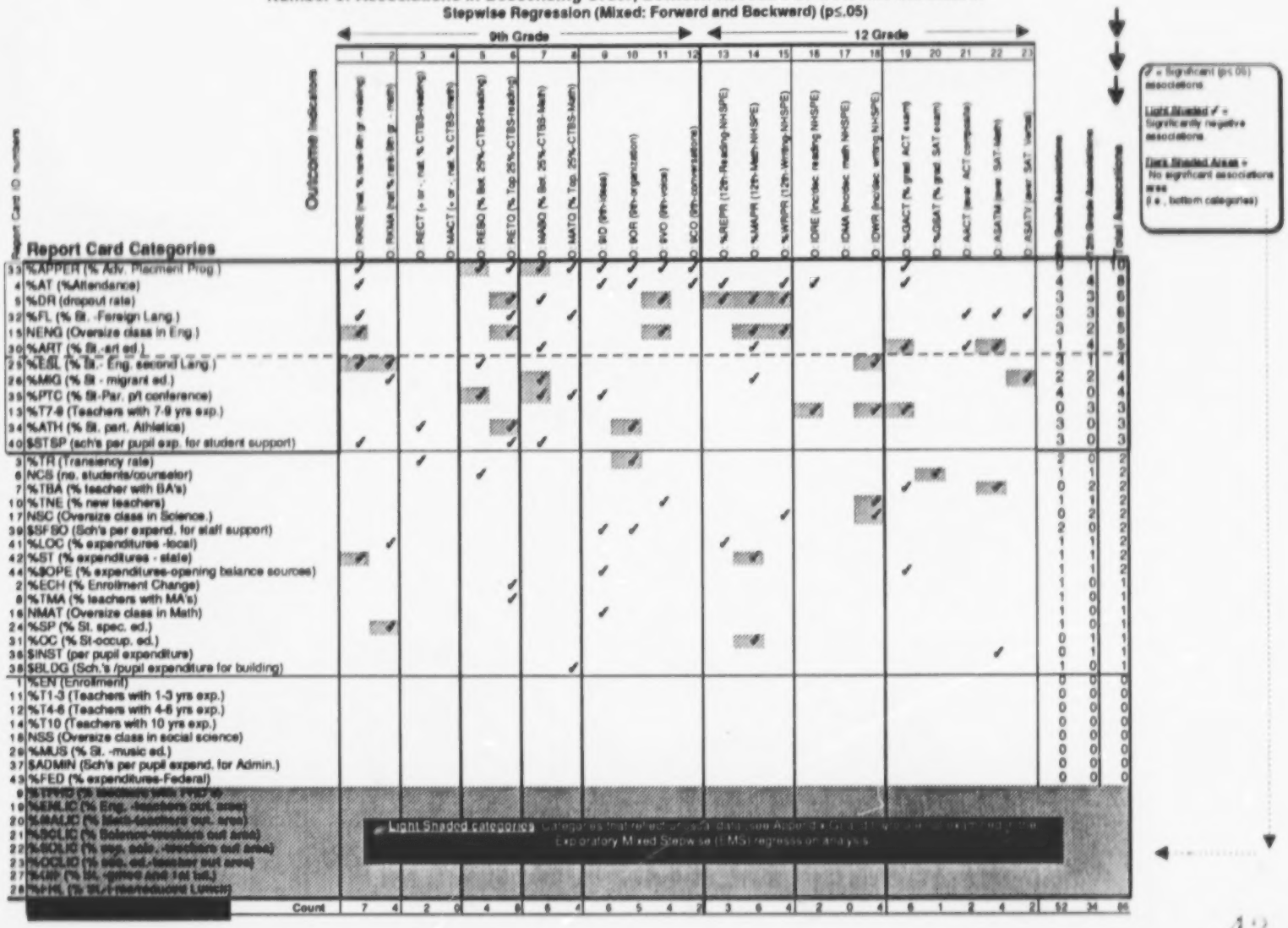
		Footnote →	1	2	2	2	2	2	3	4
	District	High School	9. TPHD	19. ENLIC	20. %MALIC	21. %SCLIC	22. %SOLIC	23. %OCLIC	27. %GIFT	28. FRL
1	DOUGLAS	DOUGLAS H.	0	1.8	0	2.7	5.2	0	0	8.6
2	DOUGLAS	WHITTELL H.	0	0	0	7.7	0	0	0	0
3	ELKO	ELKO H.	0	0	0	0	0	0	0	1.7
4	HUMBOLDT	LOWRY H.	0	0	0	0	0	0	0	16
5	LANDER	BATTLE MT. H.	0	0	0	3.1	0	0	0	3.6
6	STOREY	VIRGINIA CTY H.	10	20	40	0	0	0	0	0
7	WASHOE	GALENA H.	0	0	0	0	0	0	0.1	12.4
8	WASHOE	GERLACH H.	0	0	0	0	0	0	0	43.2
9	WASHOE	HUG H.	0	0	0	0	0	0	1.1	34.8
10	WASHOE	INCLINE H.	0	10	0	0	0	0	1.9	5.5
11	WASHOE	MCQUEEN H.	0	0	0	0	3	0	2.6	8.5
12	WASHOE	REED H.	0	0	0	0	0	0	2.1	11.3
13	WASHOE	RENO H.	0	0	0	0	0	0	3.1	11.9
14	WASHOE	SPARKS H.	0	0	0	0	0	0	1.2	20.3
15	WASHOE	WASHOE H.	0	0	0	0	0	0	1.6	0
16	WASHOE	WOOSTER H.	0	0	0	0	0	0	1.7	26.8
17	CLARK	BASIC H.	0	0	0	0	0	0	5.8	0
18	CLARK	BONANZA H.	1	2.3	0	1.6	0	0	7.6	0
19	CLARK	BOULDER CITY H.	0	0	0	0	0	0	6.4	0
20	CLARK	CHAPARRAL H.	1	0	0	4.1	0	0	8.8	0
21	CLARK	CHEYENNE H.	0	0	0	0	4.3	20.8	4.5	0
22	CLARK	CIMARRON-MEM H.	0	5.4	0	0	0	0	5.3	0
23	CLARK	CLARK H.	3	0	0	0	0	16.6	5.6	0
24	CLARK	ELDORADO H.	1	0	3.1	0	0	0	5.1	0
25	CLARK	GREEN VALLEY H.	1	0	0	0	0	0	7.3	0
26	CLARK	LAS VEGAS H.	2	0	0	2.3	0	0	4.1	0
27	CLARK	RANCHO H.	2	2.2	0	0	0	0	1.8	0
28	CLARK	VALLEY H.	1	0	0	0	0	0	5.2	0
29	CLARK	WESTERN H.	0	0	0	0	0	3	4.5	0
30	CLARK	INDIAN S H. JH.	0	0	12.5	0	0	0	3.2	21.1
31	LINCOLN	LINCOLN CO. H.	1	0	0	0	0	0	0	26
32	LYON	DAYTON H.	0	0	0	0	0	0	3.4	19.6
33	LYON	FERNLEY H.	0	0	0	0	0	0	2.1	20.2
34	LYON	YERINGTON H.	0	0	0	0	0	0	3.9	23.9
35	MINERAL	MINERAL CO. H.	0	0	0	0	0	0	.	.
36	NYE	BEATTY H.	0	0	0	0	0	0	0	27.6
37	NYE	GABBS H.	0	0	0	0	0	0	0	20.2
38	NYE	PAHRUMP H.	0	0	0	0	0	0	0	26.7
39	NYE	TONOPAH H.	0	0	0	0	0	0	0	11.2
40	PERSHING	PERSHING CO. H.	8.6	0	0	0	0	0	0	22.5
41	EUREKA	EUREKA H.	0	10	0	0	11.1	0	10.9	17.4
42	WHITE PINE	WHITE PINE H.	0	0	0	0	0	0	0	0
43	CARSON CITY	CARSON H.	0	0	0	0	1.3	0	4.5	20.6
44	CLARK	HORIZON H.	.	.	.	.	.	.	.	.
45	CLARK	SUNSET H.	.	.	.	.	.	.	.	.
46	CHURCHILL	CHURCHILL H.	0	0	0	0	0	0	.	18.7
47	CLARK	SNVTC H.	0	0	0	0	0	0	2.4	0
		Integers	11	7	3	6	4	3	29	26
		Number of "0"s	34	38	42 #	39	41	42 #	16	19
		Percentage of "0"	76%	84%	93%	87%	91%	93%	36%	42%

Footnotes

1. A large percent (%) of teachers not having a PHD
2. % of Teachers teaching out of area (English, Math, Science, Social studies, and Occupational education)
3. % Students Gifted and Talented education
4. % Students participating in Free and Reduced Lunch program


Associations Between Nevada's 44 Report Card Categories and 23 Outcome Indicators:
Stepwise Regression (Mixed: Forward and Backward) (p≤.05)
9th Grade
12 Grade
Outcome Indicators
Report Card Categories
✓ = Significant (p≤.05) associations
Light Shaded ✓ = Significantly negative associations
Dark Shaded Areas = No significant associations area
Light-Shaded categories: Categories that reflect unrelated data (see Appendix XX) and therefore not examined in the Exploratory Mixed Stepwise (EMS) regression analysis.
Count
Adjusted R^2

Number of Associations in Descending Order, Between Nevada's 23 Outcome Indicators:
Stepwise Regression (Mixed: Forward and Backward) (ps.05)


9th Grade
12 Grade
Report Card ID numbers
Outcome Indicators
Report Card Categories
%APPER (% Adv. Placement Prog.)
%AT (%Attendance)
%DR (dropout rate)
%FL (% St. -Foreign Lang.)
NENG (Oversize class in Eng.)
%ART (% St.-art ed.)
%ESL (% St.- Eng. second Lang.)
%MIG (% St - migrant ed.)
%PTC (% St-Par. p/t conference)
%T7-9 (Teachers with 7-9 yrs exp.)
%ATH (% St. part. Athletics)
$STSP (sch's per pupil exp. for student support)
%TR (Transiency rate)
NCS (no. students/counselor)
%TBA (% teacher with BA's)
%TNE (% new teachers)
NSC (Oversize class in Science.)
$SFSO (Sch's per expend. for staff support)
%LOC (% expenditures -local)
%ST (% expenditures - state)
%$OPE (% expenditures-opening balance sources)
%ECH (% Enrollment Change)
%TMA (% teachers with MA's)
NMAT (Oversize class in Math)
%SP (% St. spec. ed.)
%OC (% St-occup. ed.)
$INST (per pupil expenditure)
$BLDG (Sch.'s /pupil expenditure for building)
%EN (Enrollment)
%T1-3 (Teachers with 1-3 yrs exp.)
%T4-6 (Teachers with 4-6 yrs exp.)
%T10 (Teachers with 10 yrs exp.)
NSS (Oversize class in social science)
%MUS (% St. -music ed.)
$ADMIN (Sch's per pupil expend. for Admin.)
%FED (% expenditures-Federal)
%ENLIC (% Eng. -teachers out. area)
%MALIC (% Math-teachers out. area)
%SCLIC (% Science-teachers out area)
%SOLIC (% soc. stds.-teachers out area)
%OCLIC (% occ. ed.-teacher out area)
%HP (% St. -gifted and tal ed.)
%FRL (% St.-Free/reduced Lunch)
Count
Total Associations
Light Shaded categories
exploratory Mixed Stepwise (t-MSr) regression analysis
✓ = Significant (p≤.05) associations
Light Shaded ✓ = Significantly negative associations
Dark Shaded Area = No significant associations area (i.e., bottom categories)

Two Regression Models used to compare Student Outcome Indicators with Nevada's Report Card Categories

	Report Card Categories	Stepwise Regression 9th Grade	Stepwise Regression 12th Grade	Stepwise Regression Total	Mixed Regression 9th Grade	Mixed Regression 12th Grade	Mixed Regression Total	Combined 9th Grade	Combined 12th Grade	Combined Total	Area	
1	%APPER (% Adv. Placment Prog.)	8	1	9	9	1	10	17	2	19	Student	Good
2	%AT (%Attendance)	4	3	7	4	4	8	8	7	15	Demographic	
3	%DR (dropout rate)	3	3	6	3	3	6	6	6	12	Demographic	
4	%FL (% St. -Foreign Lang.)	3	2	5	3	3	6	6	5	11	Student	
5	%PTC (% St-Par. p/t conference)	5	2	7	4	0	4	9	2	11	Student	
6	%MIG (% St - migrant ed.)	3	3	6	2	2	4	5	5	10	Student	
7	%ART (% St.-art ed.)	3	0	3	1	4	5	4	4	8	Student	
8	NENG (Oversize class in Eng.)	1	1	2	3	2	5	4	3	7	Teacher	
9	$STSP (sch's per pupil exp. for student suppo	3	1	4	3	0	3	6	1	7	$	
10	%ESL (% St.- Eng. second Lang.)	2	0	2	3	1	4	5	1	6	Student	
11	%ATH (% St. part. Athletics)	3	0	3	3	0	3	6	0	6	Student	
12	$SFSO (Sch's per expend. for staff support)	3	0	3	2	0	2	5	0	5	$	
13	%LOC (% expenditures -local)	2	1	3	1	1	2	3	2	5	$	
14	%TR (Transiency rate)	1	1	2	2	0	2	3	1	4	Demographic	Moderate
15	NCS (no. students/counselor)	1	1	2	1	1	2	2	2	4	Demographic	
16	NSC (Oversize class in Science.)	1	1	2	0	2	2	1	3	4	Teacher	
17	%OCLIC (% occ. ed.-teacher out area)	3	1	4				3	1	4	Teacher	
18	%ST (% expenditures - state)	1	1	2	1	1	2	2	2	4	$	
19	%TBA (% teacher with BA's)	0	1	1	0	2	2	0	3	3	Teacher	
20	%TPHD (% teachers with PHD's)	2	1	3				2	1	3	Teacher	
21	%T7-9 (Teachers with 7-9 yrs exp.)	0	0	0	0	3	3	0	3	3	Teacher	
22	%MALIC (% Math-teachers out. area)	1	2	3				1	2	3	Teacher	
23	%SP (% St. spec. ed.)	1	1	2	1	0	1	2	1	3	Student	
24	%OC (% St-occup. ed.)	0	2	2	0	1	1	0	3	3	Student	
25	%$OPE (% expenditures-opening balance so	1	0	1	1	1	2	2	1	3	$	
26	%TNE (% new teachers)	0	0	0	1	1	2	1	1	2	Teacher	
27	%T1-3 (Teachers with 1-3 yrs exp.)	0	2	2	0	0	0	0	2	2	Teacher	
28	%T10 (Teachers with 10 yrs exp.)	2	0	2	0	0	0	2	0	2	Teacher	
29	NMAT (Oversize class in Math)	1	0	1	1	0	1	2	0	2	Teacher	
30	%ENLIC (% Eng. -teachers out. area)	1	1	2				1	1	2	Teacher	
31	%SOLIC (% soc. scie. -teachers out area)	0	2	2				0	2	2	Teacher	
32	%ECH (% Enrollment Change)	0	0	0	1	0	1	1	0	1	Demographic	Poor/Bad !
33	%TMA (% teachers with MA's)	0	0	0	1	0	1	1	0	1	Teacher	
34	NSS (Oversize class in social science)	1	0	1	0	0	0	1	0	1	Teacher	
35	%GIF (% St. -gifted and Tal Ed.)	1	0	1				1	0	1	Student	
36	%MUS (% St. -music ed.)	0	1	1	0	0	0	0	1	1	Student	
37	$INST (per pupil expenditure)	0	0	0	0	1	1	0	1	1	$	
38	$BLDG (Sch.'s /pupil expenditure for building)	0	0	0	1	0	1	1	0	1	$	
39	%EN (Enrollment)	0	0	0	0	0	0	0	0	0	Demographic	
40	%T4-6 (Teachers with 4-6 yrs exp.)	0	0	0	0	0	0	0	0	0	Teacher	
41	%SCLIC (% Science-teachers out area)	0	0	0				0	0	0	Teacher	
42	%FRL (% St.-Free/reduced Lunch)	0	0	0				0	0	0	Student	
43	$ADMIN (Sch's per pupil expend. for Admin.)	0	0	0	0	0	0	0	0	0	$	
44	%FED (% expenditures-Federal)	0	0	0	0	0	0	0	0	0	$	
	Sum →	61	35	96	52	34	86	113	69	182		

Z-Score Rankings of Nevada's 23 Outcome Indicators in Descending Order:

"-" = No available data,
Shade=Negative z-score,
Box= ±1 z-score.

	District	High School	9th Grade: RARE (std % rank 9th gr reading)	9th Grade: RAMA (std % rank 9th gr math)	9th Grade: RECT (-1 or -2 std % CTBS reading)	9th Grade: MACT (-1 or -2 std % CTBS math)	9th Grade: RBTO (% Bot 25% CTBS reading)	9th Grade: RATO (% Top 25% CTBS reading)	9th Grade: MABO (% Bot 25% CTBS math)	9th Grade: MATO (% Top 25% CTBS math)	9th Grade: SID (9th dropout)	9th Grade: SOR (9th repetition)	9th Grade: SNO (9th voice)	9th Grade: SCO (9th conversation)	12th Grade: %RERR (12th Reading NHSPR)	12th Grade: %MARR (12th Math NHSPR)	12th Grade: %WRR (12th Writing NHSPR)	12th Grade: ORE (nonbloc reading NHSPR)	12th Grade: OMA (nonbloc math NHSPR)	12th Grade: OWR (nonbloc writing NHSPR)	12th Grade: %GACT (% grad ACT exam)	12th Grade: %GSAT (% grad SAT exam)	12th Grade: AACT (over ACT composite)	12th Grade: ASATM (over SAT Math)	12th Grade: ASATV (over SAT Verbal)	Summary Z-score Analysis: 9th Grade	9th Grade Rank	12th Grade	12th Grade Rank	Difference	Total	Rank
1	CARSON CITY	CARSON H.	-	-	-	-	-	-	-	-	-	-	-	-	.53	.50	.36	3.96	4.52	2.64	.40	.96	.18	-.02	-.30	-	-	1.25	44	-	1.25	47
2	WASHOE	MCQUEEN H.	1.48	1.43	.33	.42	-1.16	1.33	-.94	1.25	1.47	1.30	.73	1.15	.36	.19	.20	-	-	-	.27	.14	1.78	.84	1.59	.73	42	.67	41	.06	.70	46
3	WASHOE	RENO H.	1.27	1.22	.19	.00	-.92	1.22	-.74	1.25	1.24	.99	.74	.92	.19	.03	.20	-	-	-	.33	1.28	.99	.72	1.40	.62	40	.64	40	.02	.63	45
4	WASHOE	GERLACH H.	1.58	.87	1.98	1.96	-1.86	-.12	-1.35	.52	.53	1.39	1.94	.74	.53	.50	.36	-	-	-	-	-	-	-	-	.76	43	.46	39	.30	.61	44
5	CLARK	GREEN VALLEY H.	1.48	1.90	.19	.42	-1.63	1.33	-1.48	1.80	1.18	1.05	.73	1.06	.23	.17	.04	-.06	-.08	.14	.85	1.12	.58	.82	.57	.98	41	.40	37	.28	.54	43
6	WASHOE	INCLINE H.	1.06	1.34	-.22	-.69	-.79	1.00	-1.06	.71	.28	.62	.51	.48	.53	.50	.36	-	-	-	.27	2.31	.74	.47	1.06	.27	32	.78	43	-.51	.53	42
7	EUREKA	EUREKA H.	1.27	.12	.74	.14	-.79	-.01	1.84	.25	.65	.78	1.00	1.40	.53	.50	.36	-.06	-.08	.14	1.17	2.21	.90	-.74	-1.85	.82	39	.35	35	.29	.48	41
8	ELKO	ELKO H.	.44	1.19	.06	.56	-.43	.55	-.74	.52	.78	.46	.70	.48	.23	.22	.26	-	-	-	-.31	-.78	.74	.86	.75	.38	34	.25	31	.13	.31	40
9	CLARK	BONANZA H.	1.06	1.62	.47	.98	-.92	1.11	-1.06	1.71	.20	.29	-.06	.49	.26	.17	.20	-.41	-.52	-.21	.20	.47	.66	.49	.16	.48	38	.13	26	.34	.30	39
10	WASHOE	GALENA H.	1.06	.31	.06	.00	-.55	1.22	.09	.61	.81	.48	.64	.43	.19	.03	.20	-	-	-	-	-	-	-	-	.43	36	.14	27	.29	.29	38
11	WASHOE	REED H.	.86	.68	.06	-.14	-.55	1.22	-.74	.43	.55	.51	.36	.81	.36	.34	.20	-	-	-	-.12	.20	.18	.63	.19	.32	33	.25	32	.07	.28	37
12	DOUGLAS	WHITTELL H.	-.18	-.63	-.22	-1.91	.18	-.01	.60	-.30	1.62	1.40	.34	.76	.53	.28	.24	1.12	-.08	.14	.07	1.12	.50	.02	.29	.15	25	.36	36	.34	.27	36
13	CLARK	CHAPARRAL H.	.65	1.29	.06	.84	-.55	.77	-.94	1.25	.66	.47	.28	.38	.02	.09	.16	-.60	-.34	-.06	.52	.20	.34	.34	.22	.43	35	.08	23	.35	.25	35
14	LYON	YERINGTON H.	-.06	-.82	.06	-1.91	-.31	-.35	.81	-.87	.42	.48	-.31	.30	-.01	-.46	.16	2.07	.84	2.94	-.31	-	.18	-	-	-.19	18	.88	42	-.87	.24	34
15	DOUGLAS	DOUGLAS H.	.02	.87	-1.84	.00	.31	.10	-.84	.71	.82	.86	.43	.60	.38	.36	.36	-.03	-.05	.14	-.51	-.40	.90	.92	.94	.21	30	.27	33	-.87	.24	33
16	CLARK	INDIAN S H. JH.	1.38	.12	2.66	.28	-1.63	1.67	-.22	1.16	.24	.31	.43	-.36	.53	.50	.36	-.06	-.08	.14	.01	-	-1.83	-	-	.47	37	.01	19	.46	.24	32
17	CLARK	BOULDER CITY H.	1.06	1.34	-1.84	-.97	-1.16	1.44	-.84	1.71	.50	.32	-.39	.42	-.05	-.03	-.07	-.79	-.70	-.86	.27	1.72	1.78	.53	.86	.20	29	.23	29	-.83	.21	31
18	LINCOLN	LINCOLN CO. H.	.96	.49	-.77	.14	-.79	1.33	-.33	.61	-.60	.54	-.99	.60	.53	.50	.36	-.06	-.08	.14	1.69	-	-.85	-	-	.10	24	.26	34	-.16	.19	30
19	CLARK	CLARK H.	-.39	-.07	1.15	.70	-.06	.33	-.02	.43	.16	.56	-.12	.11	-.03	.27	.02	-.47	-.20	-.26	-.12	.09	.98	.85	.29	.23	31	.11	25	.12	.17	29
20	HUMBOLDT	LOWRY H.	-.49	-.45	-.22	.14	.67	-.23	.22	.07	-.22	-.22	.50	.45	.19	.39	.36	-.06	-.08	.14	1.30	.09	.26	-.21	.32	-.02	21	.25	30	-.36	.11	28
21	CLARK	CIMARRON-MEM H.	.54	.31	-.22	-.42	-.92	.77	-.84	.34	.26	.29	.15	.62	.35	.25	.18	-.06	-.08	.14	-.25	-.24	.03	.06	-.24	.09	23	.01	20	.08	.06	27
22	PERSHING	PERSHING CO. H.	-.81	-1.29	-.90	-1.34	1.28	-1.15	2.35	-1.87	.11	-.16	.05	-.20	.53	.50	.36	-.06	-.08	.14	2.33	-.34	-1.83	.94	1.40	-.31	11	.40	38	-.72	.05	26
23	LYON	FERNLEY H.	-.06	-.63	-.90	-.42	-.18	.21	.91	-.48	.23	.14	.62	.17	-.42	-.59	.36	-.11	-1.21	.69	.40	.25	.18	.00	.19	-.03	19	-.02	17	-.01	-.03	25
24	CLARK	VALLEY H.	-.49	-.16	1.57	.70	-.06	.10	.19	.43	.00	-.08	.09	-.29	-.32	-.19	-.23	-.74	-.70	-.46	-.44	.09	-.13	.41	-.15	.17	27	-.26	11	.43	-.05	24
25	CLARK	BASIC H.	.23	.59	.47	.42	-.79	-.12	-.74	.43	-.05	.29	-.38	.22	.04	-.05	-.15	-.25	-.46	-1.06	.14	-.83	.03	.84	.16	.06	22	-.14	13	.16	-.05	23
26	CHURCHILL	CHURCHILL H.	-	-	-	-	-	-	-	-	.17	-.10	-1.82	-.13	.26	.17	.10	-.06	-.08	.14	.52	-.24	.66	.10	.16	-.27	13	.16	28	-.43	-.06	22
27	WASHOE	SPARKS H.	-.29	.12	2.11	1.40	-.06	-.57	-.53	-.56	.22	.21	.10	.14	.36	.34	.20	-	-	-	-.38	.20	-1.17	-.56	-1.28	.19	28	-.30	7	.49	-.06	21
28	CLARK	ELDORADO H.	-.18	.02	.47	1.40	-.43	-.23	-.43	.25	-.39	-.46	-.34	.02	.12	.20	.23	.00	.13	.44	-.64	-.07	-.13	-.54	-.92	-.03	20	-.11	15	.08	-.07	20
29	CLARK	CHEYENNE H.	-.49	-.54	.88	-.28	.18	-.01	.19	-.21	.24	.28	.14	-.12	-.54	-.48	-.25	-.06	-.08	.14	.07	.25	-.13	.28	-.05	-.07	18	-.08	16	.01	-.07	19
30	CLARK	WESTERN H.	-.60	-.92	-.77	-.97	.18	-.35	.29	-.39	.11	-.12	.42	-.48	-.15	-.03	.05	-.33	-.17	.14	-.12	-.40	.56	.89	.85	.30	12	.10	24	-.18	-.10	18
31	NYE	BEATTY H.	-1.43	-.45	-	-	1.04	-1.86	-.22	-1.91	.67	.13	-.22	.83	.53	.50	.36	-	-	-	-.51	1.61	-1.17	.48	-.52	.27	14	.04	22	-.31	-.11	17
32	NYE	TONOPAH H.	.34	.02	-	-	.43	.44	.81	-.56	-1.48	-1.18	-.11	-1.87	.53	.50	.36	-	-	-	-.57	-.40	.34	-.79	.22	-.25	15	.02	21	-.27	-.11	16
33	WASHOE	WOOSTER H.	-.70	-.07	-1.06	-1.91	.79	-.57	.29	.07	-.38	-.43	-.16	-.46	.19	-.43	.04	-	-	-	-1.84	-.02	.34	.08	-.18	-.35	10	-.13	14	-.21	-.24	15
34	LANDER	BATTLE MT. H.	-.49	.59	-.35	.14	.43	-.91	-2.06	.34	.70	.89	.78	.86	.53	.50	.36	-.06	-.08	.14	-.52	-2.45	-.81	-1.84	-1.38	.16	26	-.70	3	.86	-.27	14
35	LYON	DAYTON H.	-.29	-.92	.06	1.62	.43	-.91	.81	-1.38	-.35	-.10	-.69	-.15	-.95	-.48	-.31	-1.84	-2.47	-1.16	-.70	-.62	.98	-.33	.50	-.12	17	-.56	5	.43	-.34	13
36	CLARK	LAS VEGAS H.	-1.18	-.82	-.08	-.28	.55	-.91	.39	-.48	-.62	-.48	-.20	-.60	-.13	-.14	-.47	.00	-.32	-1.31	-.70	-.34	-.13	.08	.16	-.39	8	-.30	8	-.09	-.34	12
37	NYE	GABBS H.	-.49	-.45	-	-	1.04	-1.47	-.84	-1.34	-2.45	-2.87	1.00	-.60	.53	.50	.36	-	-	-	3.04	-1.34	-1.81	-	-	-.74	4	-.01	18	-.78	-.37	11
38	STOREY	VIRGINIA CTY H.	-.49	-.35	-1.84	-.97	.79	-.12	.29	-1.46	-	-	-	-	.53	.50	.36	-.06	-.08	.14	-.51	-1.54	-1.80	-	-	-.48	6	-.27	9	-.21	-.38	10
39	WASHOE	HUG H.	-1.81	-.82	-.49	.42	1.04	-.68	.81	-.76	-1.17	-1.83	-2....	-....	.02	-.12	.20	-	-	-	-1.16	-.40	.29	.23	-.67	-.50	5	-.33	6	-.17	-.42	9
40	CLARK	RANCHO H.	-1.48	-1.90	-1.04	-.42	1.04	-1.38	.81	-.85	-.92	-1....	-.89	-1.54	-1.96	-.34	-.84	-1.45	.16	-1.96	-.57	-.51	-.29	.41	-.21	-.77	3	-.64	4	-.12	-.70	6
41	MINERAL	MINERAL CO. H.	-.70	-1.81	.33	1.62	.55	-2.06	.09	-1.74	-3.06	-2.45	-4.87	-4.39	.83	.59	.12	.22	1.11	-1.36	-	-	-	-	-	-1.59	1	-.26	10	-1.3	-.93	7
42	WASHOE	WASHOE H.	-3.06	-3.17	-1.84	-1.91	3.97	-2.06	3.49	-2.18	-1.79	-2.22	-.76	-1.81	.49	.03	.20	-	-	-	-2.77	-2.28	.82	-2.16	-2.06	-1.02	2	-.97	2	-.85	-1.00	8
43	NYE	PAHRUMP H.	-.70	-1.38	-	-	1.04	-.68	.91	-.56	-.41	-1.16	-.14	-1.61	-1.91	-1.06	-1.38	-	-	-	-.96	-1.57	-1.37	-2.06	-1.48	-.40	7	-3.19	1	2.8	-1.79	5
44	CLARK	SNVTC H.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
45	WHITE PINE	WHITE PINE H.	-.29	-.35	-.49	-1.38	.43	.55	.33	.25	-	-	-	-	.41	.50	.31	.03	.31	.14	-1.83	-1.37	-1.80	.82	.47	-	-	-	-	-	-	3
46	CLARK	HORIZON H.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
47	CLARK	SUNSET H.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1